AUGUST 1, 1960

PAPER TRADE JOURNAL

Modern Headbox Design . . .

Special article, in three sections, details developments in headbox equipment over the past decade

Automatic Roll Handling . . .

at St. Joe Paper Co. features a 1/4 mi., 38 car overhead monorail

New Type Sheet Cutter . . .

at Westvaco, first in N.A., has rotary knives timed to web speed

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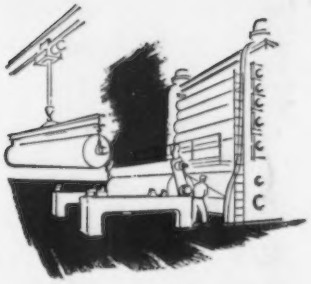
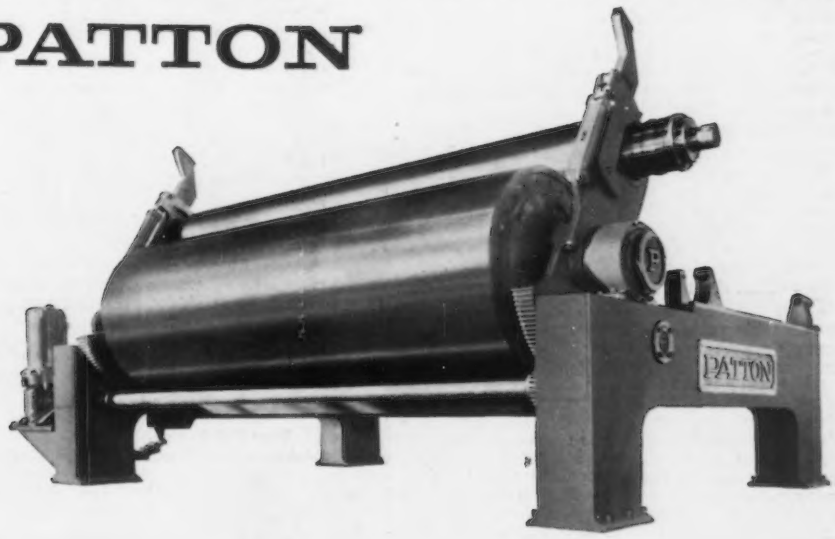
Ann Arbor, Mich.



HORIZONTAL TRACK REELS

by PATTON



THE PATTON MANUFACTURING COMPANY, INC. • SPRINGFIELD, OHIO
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A Nalco PRODUCT MANAGER

Answers Questions About Slimes in Pulp and Paper Mills

Facts about a tough, continuing paper mill problem

Slimes are expensive—whether they slow production, spot finished paper, produce foul odors, increase maintenance time and expense, or corrode equipment, they cost the papermaker money. Here are a few of the more common questions about papermill slimes and slime control, answered for you by R. E. Eddy, product manager of Nalco Chemical Company's paper chemicals department.

Question: What Are Slimes?

Answer: Microbiological slimes are deposits of substances exuded by microorganisms, and chemical slimes are accumulations of water-borne fibers and chemicals. Microbiological slimes serve as a binder for chemical slimes, which in turn harbor the microorganisms which produce microbiological slimes. Slimes, however, are *not* microorganisms, but rather are substances produced *by* microorganisms.

Question: Why is slime control difficult in the paper industry?

Answer: Because paper mill systems provide the food supply, moisture, darkened recesses, and temperatures ideal for slime growth. Some organisms, not considered slime-producers in other industries, become of serious concern to the papermaker because of these ideal growth conditions.

Question: How can slime be controlled?

Answer: By establishing and maintaining a complete slime control program, to include chemical and physical analyses of the troublesome deposits, a survey of the paper mill system, and the application of chemical and mechanical slime control methods.

Question: What are the major considerations in a slime control program?

Answer: Types of organisms, points of infection, and flow of infection. Microbiological analysis of slime deposits shows which particular slime-forming microorganisms (spore formers, non-spore formers, fungi) are present in a given system, and analysis of stream samples points out centers of infection and flow of infection. In addition, an overall engineering survey of the entire system should be made, including flow diagrams, information on chemicals and raw materials used, water consumption rates, points and quantities of white water usage, system temperatures, and pH conditions. All of this information is then coordinated into a program of control.

Question: Who does the coordinating?

Answer: Your Nalco field representative can do it for you. Working in your mill, with your personnel, he will determine the best overall slime control program for your particular system. In addition to his own skills and experience in slime control, the Nalco field representative has the skills, experience, and facilities of Nalco's laboratories to call on if necessary.

Question: What does Nalco offer in the way of slime control?

Answer: A wide variety of quality products, excellent customer service, and a solid foundation of slime-control experience and knowledge. Nalco slimicides are available for use under any number of conditions—against different types of slime formers, in acid or alkaline operations, for continuous, intermittent, or slug feeding. No single slimicide can control all kinds of slime under all conditions, but your Nalco field representative can find the right combinations of slime-controlling chemicals for your mill, and determine the most economical method of application. The Nalco field representative will serve as a slime-control consultant—and even if there is a question he isn't able to answer immediately, he knows where to go to get the information he needs: Nalco's laboratories.

R. E. Eddy, Product Manager
Paper Industry Chemicals Department

Question: Why are there occasional flare-ups of new types of slime, even where a slime control program is in effect?

Answer: Because microorganisms compete for food. As one type of microorganism is eliminated, more food becomes available for other types. Other organisms get more food, thus flourish. Also, new types of microorganisms may be carried into the mill system via air, water, or raw materials. That's why a slime control program must be a continuing effort, ready to counter and destroy any new type of organism as soon as it appears.

Question: What's new in slime control?

Answer: Among other things, Nalco's organo-sulfur slimicides, available in liquid (Nalcon 242) and solid ball briquette (Nalcon 245) form. These Nalcon slimicides are effective additions to Nalco's proven line of slime control chemicals.

Question: What are Nalcon slimicides?

Answer: A combination of a powerful organo-sulfur microbiological agent and anionic dispersants. The organo-sulfur agents destroy slime producers (especially effective on non-spore formers) and the anionic dispersants have a dual function – they carry the organo-sulfurs to every part of the system, and they break up deposits of chemical slime. Nalcon slimicides aren't retained in finished paper, are non-phenolic and non-metallic. They have also been approved by the U.S. Food and Drug Administration for use in the manufacture of paper products to be used for food packaging.

Question: How quickly can an effective slime control program be established?

Answer: As quickly as you wish. Call your Nalco representative for prompt action, or write me for further details: R. E. Eddy, Product Manager, Paper Industry Chemicals Department.

"Nalcon" is a trademark of Nalco Chemical Company

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what makes this new method so successful?

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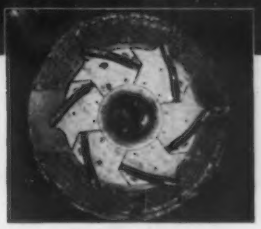
The success of the Emerson Triple Attack Pulper lies in its advanced lobe shape, tapering tub walls, conical bottom and effective impellor action.

Pulp fibers are subjected to a relentless triple attack by (1) the violent agitation of the impellor, by (2) the force and friction of fiber contact with the specially designed tub walls, and by (3) the vigorous hydraulic defibering action caused when on-coming stock streams from the impellor hit the flow of stock returned by the tub walls.

Because of this exclusive tapered and lobed wall construction, all "dead spots" are eliminated. Triple Attack pulping provides complete defibering by the fastest, most economical method yet devised.

For further information, please write to The Emerson Manufacturing Co., Division of John W. Bolton & Sons, Inc., Lawrence, Massachusetts.



The rotor and extraction plate

View of vortex and stock flow at 8-9% consistency

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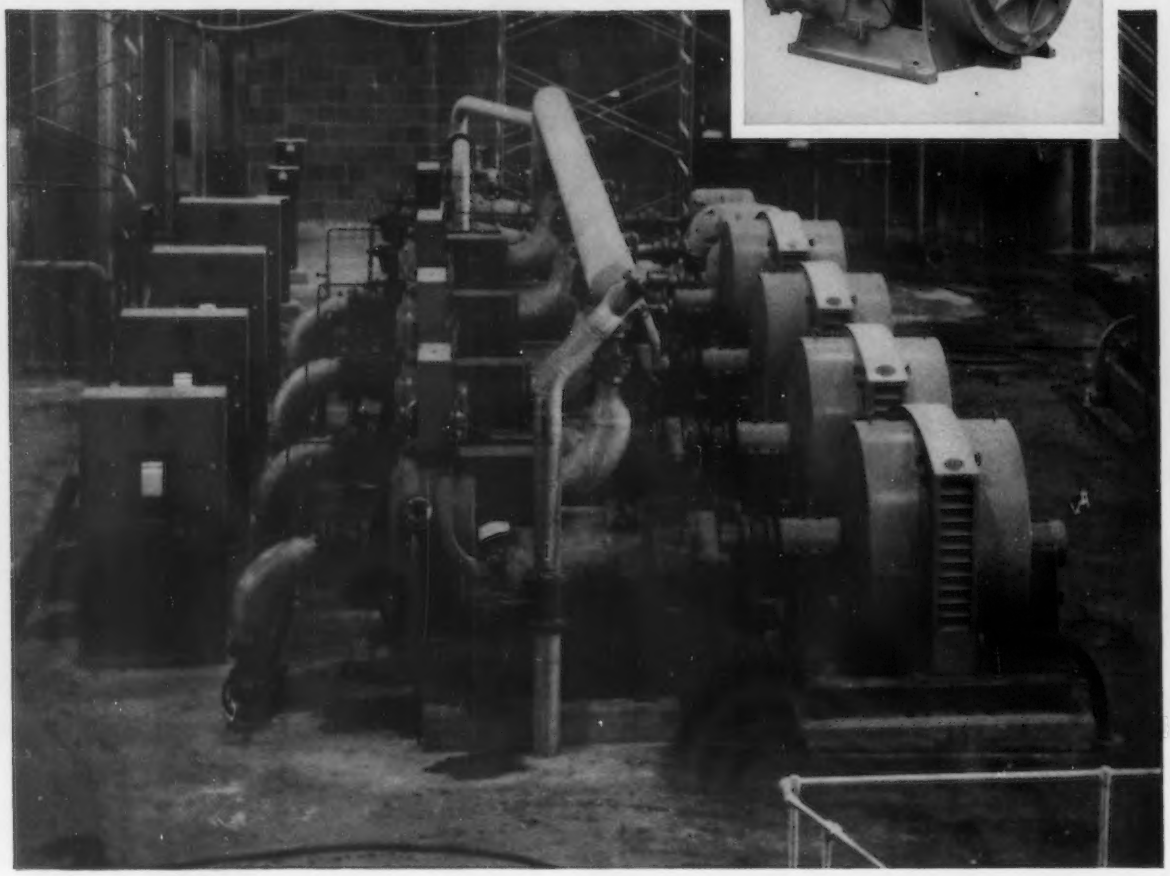
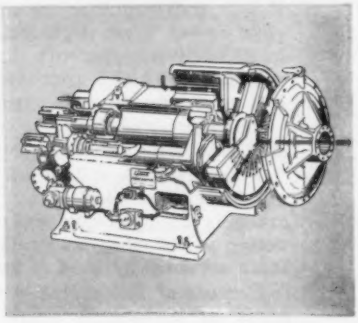


. . . at International's Pine Bluff Mill

Production schedules at International's Pine Bluff Mill call for over 500 tons of quality foodboard stock per day — from one 300" Beloit machine. Helping to make this tonnage possible is an efficient battery of four Jones Double-D's operating in parallel for primary refining. Each unit is driven by a 600 HP motor. Working continuously since the mill was put in operation, *each Double-D has been processing approximately 140 tons per day . . . for an outstanding performance rating of only 4.4 HP days per ton* to accomplish almost two thirds of the total primary refining. Important, too, is the fact that Jones Double-D's save on floor space — since each does the work of two ordinary single disc machines.

The experience at International is typical of Jones Double-D's efficiency in many mills. Why not get high production at low HP days per ton — with less floor space in your mills, too? For full details write to E. D. Jones Corporation, Pittsfield, Massachusetts, for Bulletin EDJ-1083.



With Jones Double-D's, stock under pressure passes between two single-faced stationary discs and one (center) double-faced rotating disc. This results in precision controlled two stage refining.

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Jones

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PAPER TRADE JOURNAL

PUBLISHED WEEKLY SINCE 1872

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REMEMBER THESE DATES

August 22-24, TAPPI Alkaline Pulping Conference, Multnomah Hotel, Portland, Ore.

September 6-9, CPPA Summer Meeting, Technical Section, Banff Springs Hotel, Banff, Alberta, Canada.

September 18-21, NPTA Semi-Annual Convention, Conrad Hilton Hotel, Chicago, Ill.

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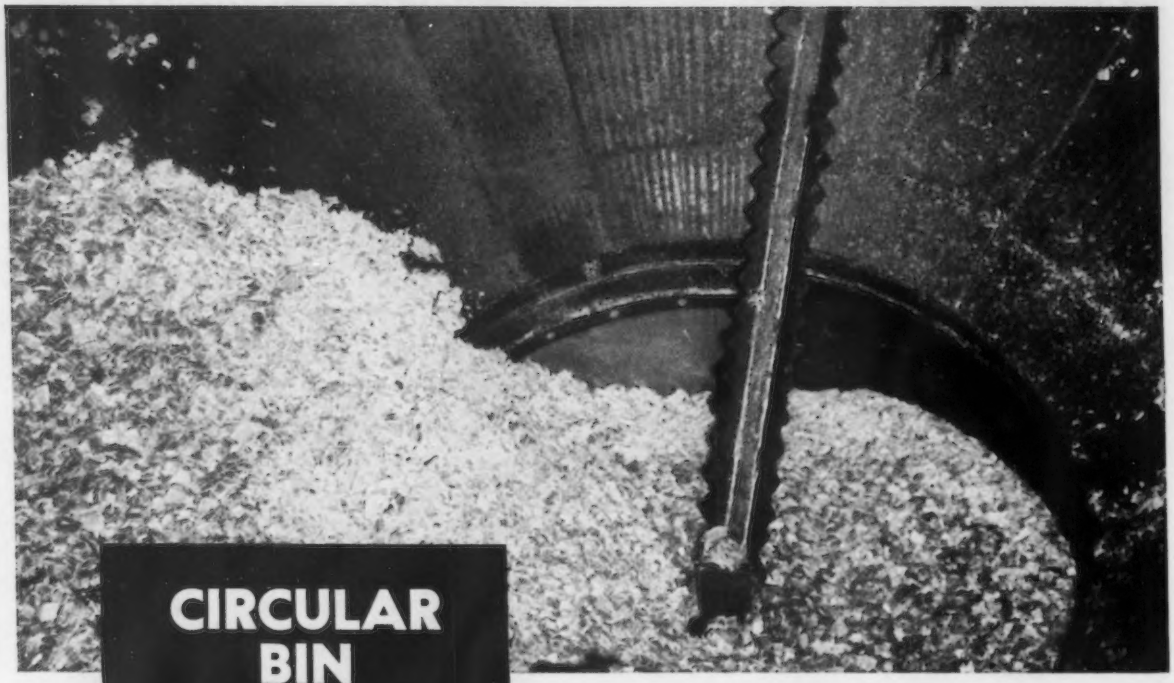

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with arch breaker eliminates arching in chip bins

Few, if any, materials are worse than wood chips when it comes to arching across the hoppered bottom of a bin or silo and refusing to flow out. A STEPHENS-ADAMSON Circular Bin Discharger with an arch breaker eliminates this problem and insures a steady flow of chips for processing.

S-A Circular Bin Dischargers with arch breakers speed material flow, increase efficiency and reduce handling.

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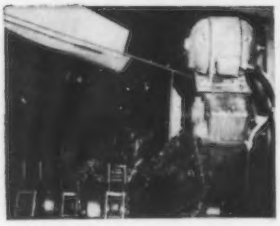
Write today for full details on S-A engineered products for log and wood chip handling systems.

S-A ENGINEERED PRODUCTS FOR LOG AND WOOD CHIP HANDLING SYSTEMS



LOG CHAIN CONVEYORS—
WRITE FOR CATALOG DATA

ROTARY PLATE FEEDER—
REQUEST CATALOG DATA

REDLER CONVEYOR-ELEVATOR—
BULLETIN 358

CIRCULAR BIN DISCHARGER—
BULLETIN 250

WRITE
FOR
LITERATURE
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ENGINEERED BULK HANDLING SYSTEMS
MATERIALS HANDLING PRODUCTS
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SEALMASTER® BALL BEARING UNITS
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Fig. 2474BSW—Bell-o-Seal (Packless) O.S.& Y. Globe Valve for 150 pounds W.P. Available in various corrosion-resisting metals and alloys. Can be furnished with screwed, flanged, socket welding or butt welding ends.

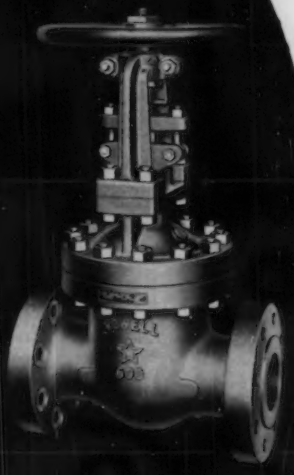

Fig. 6003SS—Large Stainless Steel Gate Valve for 600 pounds W.P. Face to face and end flange dimensions conform to latest standards. Sizes ½" to 24", inclusive.

Fig. 2345—Stainless Steel, screwed end Swing Check Valve for 300 pounds W.P. Available also with flanged or socket welding ends. Face to face and end flange dimensions of flanged end valves conform to latest standards.

Powell pure metal and special alloy valves have long been recognized by the Chemical and Process Industries as leaders in the field of corrosion-resistant flow control equipment.

The result of painstaking research; years of experience in modern foundry practice, pattern limitations, and machining possibilities, Powell Corrosion-Resistant valves can be depended upon for long uninterrupted service, with little or no maintenance, and freedom from contamination of end product.

They are available in a wide selection of materials ranging from "A" to "Z" (Aluminum to Zirconium) to handle practically every known corrosive media. For complete details contact your nearby Powell Valve Distributor—or write directly to us.

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ROLL GRAB INSTALLATION HANDLES 8000 TONS MONTHLY

Rolls up to 60" diameter and 60" to 85" long, weighing up to 6000 lbs. are stacked vertically to heights over 35 feet. Storage area is piled solid with no aisleway space provided.

Operator ALONE in Cleveland Tramrail Crane Serves ENTIRE Warehouse Operation

AT the Downing Box Co., Milwaukee, one man per shift takes care of all incoming and outgoing rolls of container board materials in a warehouse of 7000 tons capacity. Rolls are picked up from railroad car loading platform and piled vertically in the storage area. Later, as required, they are taken from storage to either the corrugator at one end of the warehouse building or to the solid fibre paster at the other end.

A Cleveland Tramrail cab-operated crane with motor-operated roll grab handles all roll movements. The crane is 94'-4" overall length, of double-girder construction and travels on five runway tracks which extend the length of the 360 foot long building. 280 feet of this length are occupied by the storage area.

The entire roll-handling job is centered in the crane operator's cab. From this lofty position, the operator can see all piles of rolls in the warehouse. He can position the crane wherever desired, and with the grab, pick up any roll from any pile. He can turn them from vertical to horizontal or vice versa.

The Cleveland Tramrail system has proven tremendously successful at Downing Box Co., because it has sharply reduced the handling cost per roll, brought about large savings through elimination of most of the former paper spoilage, and greatly increased the capacity of the roll storage section.

CLEVELAND TRAMRAIL

Overhead Materials Handling Equipment

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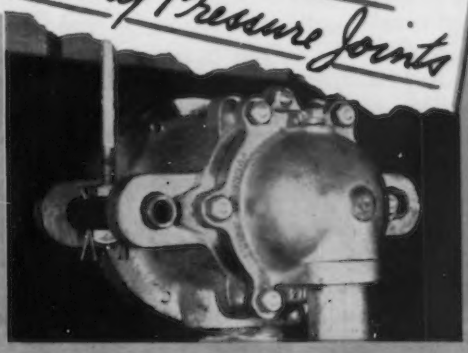
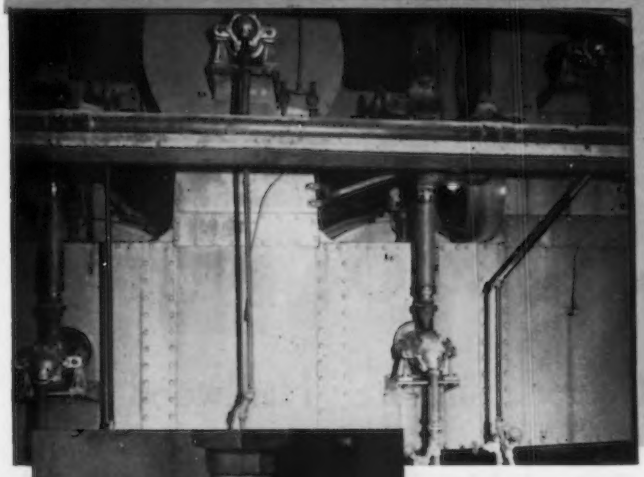
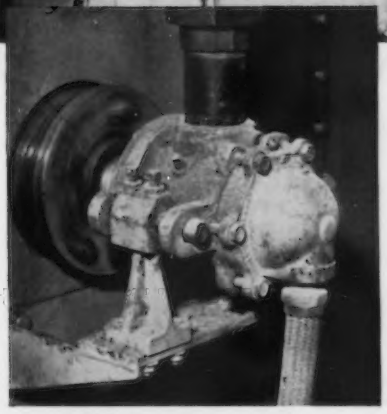
Rebuild it Right!

All dryers on paper machine shall be equipped with Johnson Rotary Pressure Joints







Two more rebuilt right!

Pictures at top show some of the 34 Type L-N Johnson Joints on rebuilt paper machine. Designed for use with rotating syphon pipe—makes it an integral part of rotating assembly. Simple support rods carry weight of joint and piping, permit rotating assembly to "float" freely inside. Note how joints are suspended from angle iron framing on this exposed-gear machine.

At left, some of 58 more Type L-N Johnson Joints on rebuilt Rice-Barton high speed, high pressure paper machine. These are long-wearing, low-friction "Super" construction, which combines rock-hard "Green Streak" seal rings with special Ni-Chrome plating on wearing surfaces. Note special support stands furnished by Johnson for this enclosed-gear machine.

There's hardly anything else you can specify when modernizing a paper machine that will bring greater reward for every dollar spent.

Johnson Joints are much more than just a better way to get steam into dryer rolls. Johnson engineering long ago opened the door to greatly improved methods of syphon drainage; important victories over friction and wear; and higher operating speeds and pressures.

Johnson Joints are available for all paper machines—rotating or stationary syphon pipes, open or enclosed gearing. All machinery manufacturers can supply them. We'll supply a pair for 90-day trial in your own mill, so you can get all the facts first hand.

Write for information on Johnson Joints—most advanced and most complete line of its kind.

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Trends

Greater Demand for Fiber Boxes Forecast

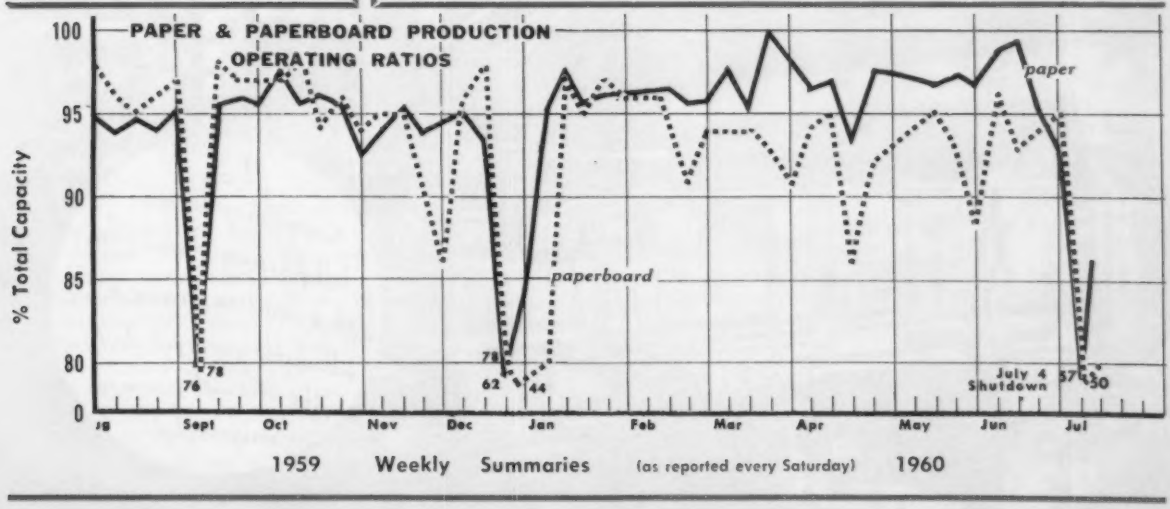
Demand for fiber boxes in 1960 will be 4% above 1959 shipments, and during the first half of 1961 fiber boxes are expected to enjoy a 9½% gain over the level of shipments in the first half of 1960, Peter W. Hoguet, president, Econometric Institute, advised members of the Fibre Box Ass'n. Mr. Hoguet predicted that in 1960 weekly fiber box demand would average 2,197 million square feet as against 1959's level of weekly shipments of 2,108 million square feet. He said that in 1961 weekly demand will average 2,222 million square feet in the second quarter, and 2,317 million square feet in the third quarter. Mr. Hoguet said that there was no possibility of a recession in 1961 and that the current quarter is the low point for the next eighteen months.

Newsprint Production Sets New Records

Production of newsprint in North America during June 1960 was a record high for this month and 5% above the June 1959 volume. According to the Newsprint Service Bureau, output in the United States represented an historical June high, a 2% gain over June 1959. Canadian production another all-time June peak, was 6% above June 1959. In each case shipments ran substantially ahead of production.

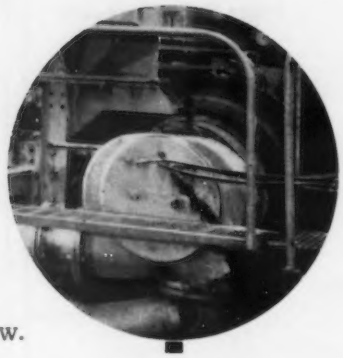
No Let-up in Construction Costs

Building costs continue their steady climb, but at a slower rate according to Morton C. Tuttle Co. The deferred wage agreements now in effect or being negotiated, guarantee cost increases in the foreseeable future. Increases in material costs have been small in the past six months. However, it is generally accepted that steel prices will increase later this year. This will have a similar effect on related and dependent materials. Work volume so far this year has not lived up to early spring indications and forecasts, but overall it may exceed the 1959 volume by a small margin.



Now . . . your tissue machine can be made to run more profitably by easy conversion to a Rice Barton

Suction Breast Roll



1. Easier, more predictable formation up to 3000 f. p. m.
2. Better control, more uniformity at any designed speed.
3. Bouncing eliminated, less fibre disturbance.
4. Shorter fourdrinier possible. Note short wire length below.

Another "first" from our drawing boards, and further proof of superior engineering that has made Rice Barton a leading paper machinery builder for 123 years. For more information on what these advantages can mean to you write

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FOURDRINIERS, PRESS SECTIONS, DRYER SECTIONS, CALENDERS AND SUPERCALENDERS, REELS, WINDERS, HEAD BOXES, SIZE PRESSES, BREAKER STACKS, DIFFERENTIAL DRAW CONTROL DRIVES AND CONE PULLEY DRIVES, PULPING EQUIPMENT, HIGH VELOCITY AIR DRYERS, TRAILING BLADE COATERS, FIBRE-FLASH DRYING SYSTEMS

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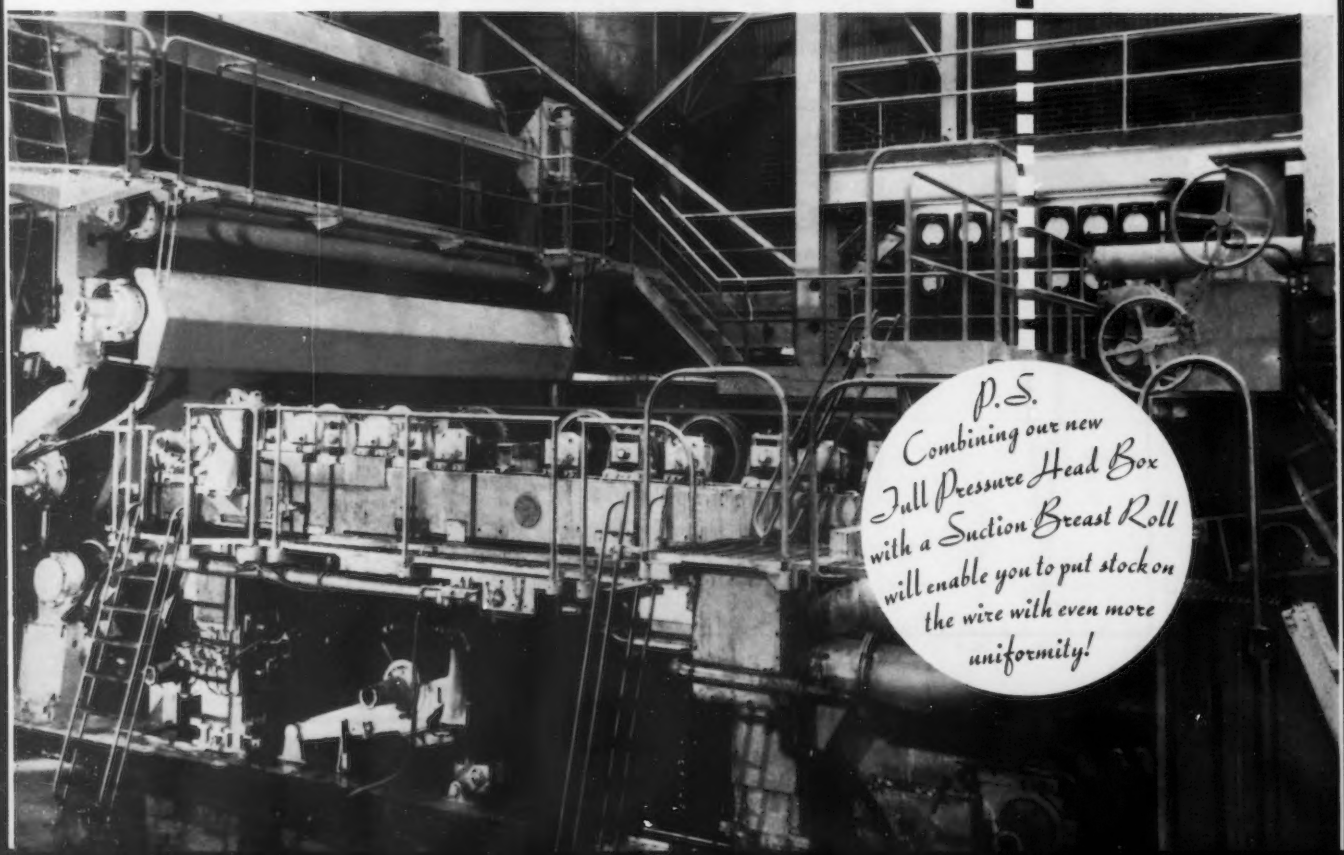

P.S.
Combining our new Full Pressure Head Box with a Suction Breast Roll will enable you to put stock on the wire with even more uniformity!

PAPER TRADE JOURNAL

WEEK OF AUGUST 1, 1960

Dixie Land to Build Mill in Alabama

Phenix City, Ala., has been selected as the site for a $30 million pulp and paper mill by Dixie Land and Timber Co. of Atlanta, Ga. The plant which will produce kraft papers and linerboard is being designed by Stone & Webster Engineering Co. Construction is slated to begin early in 1961 with start-up in about one year from then.

St. Regis Details Sisalkraft Offer

Stockholders of the American Sisalkraft Corp. have been advised of an offer by the St. Regis Paper Co. Negotiations for the merger have been going on since last January.

The latest announcement to the stockholders by Spencer F. Higgin, Sisalkraft Corp. president, and William N. Stevenson, board chairman, states St. Regis has offered to exchange shares of common stock on the basis of six shares of St. Regis stock to ten shares of Sisalkraft stock.

Sisalkraft officials stated holders of more than a majority of the outstanding shares, including those in the possession of all the directors, have agreed to exchange their shares under this agreement.

Anglo-Southern Gets Industrial Water Permits

Anglo-Southern Paper Corp. of Texarkana has been granted two permits to develop Red River and Barkman Creek for industrial purposes by the Texas Board of Water engineers.

Because the Red River changes its course frequently, there was a question of whether the rights of way would be in Texas or Arkansas.

Attorney Norman Russell assured the board that land options had been acquired with an eye toward a shift in the river bed.

Anglo-Southern, represented by Charles H. Carpenter, construction engineer, told the board the new mill would cost $50 million.

South African Expansion

Expansion projects in South Africa include manufacture of newsprint by South African Pulp & Paper Industries (Sappi) at its Enstra mills near Johannesburg early next year. This plant will also make lower grades of writing and printing papers. Tissue mills are being enlarged to supply the bulk of South Africa's requirements.

A new board mill is being built at Cape Town by the South African Board Mills, Ltd. Sappi is installing a new machine at the Tugela, Zululand, mill to produce the Union's total requirements of multi-wall bag paper plus a linerboard for export. Sappi is also planning production of coated papers at its Enstra mill.

A new company plans a pulp and paper mill at Piet Retief, Eastern Transvaal, on the borders of Swaziland. Across the border in Swaziland the British Colonial Development Corp., in association with Courtaulds, Ltd., is building a kraft pulp mill.

New Sulphite Pulp Mill Planned for Argentina

A new sulphite mill to produce dissolving pulp for rayon and cellophane manufacture, and bleached sulphite pulp for paper production, is planned by an Argentine pulp and paper enterprise, Papelera Rio Parana S. A., whose plant in Campana, Buenos Aires Province, has been in operation since 1950. The company's own plantations in Entre Rios Province will supply an increasing part of the pulping wood required for a new mill.

The new expansion will raise the company's pulp production capacity from approximately 6,000 to about 17,400 metric tons annually. The dissolving pulp production will supply the local market. A substantial portion of the bleached sulphite pulp will be consumed by Papelera Rio Parana's own paper mill, the remainder being sold to other paper manufacturers.

Mo och Domsjo, a large Swedish pulp company, is said to be investing in this project and supplying technical assistance.

Paper and Paperboard Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending July 16, 1960, at 86.3 per cent compared with 60.1 per cent revised, for the preceding week. The ratio was 90.3 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paperboard production ratio for the week ending July 16, 1960, at 74 per cent, compared with 50 per cent for the preceding week and 84 per cent for the corresponding week a year ago.

(Detailed Statistics on page 54)

CONSTRUCTION PROGRESS continues steadily on the Tennessee River Pulp & Paper Co.'s new 500 tons per day kraft pulp and linerboard mill being erected by The M. W. Kellogg Co. on a lump-sum basis. The product warehouse is the completed building in the left foreground of this aerial view of the Counce, Tenn., site just south of the TVA's Pickwick Dam (upper right). Looking at the center of the photo and moving counter-clockwise are the machine room, the pulping and washing area, the machine shop and mill stores building, the recausticizing area, and the six towers of the sextuple-effect vaporators.

St. Regis Develops New Patented Material

A new development in the field of paper and plastic combinations is St. Regis Paper Co.'s patented material in which a flexible sheet of foam styrene is bonded to a flexible sheet of paper or other material.

A patent owned by St. Regis (#2,917,217) covers not only the material but also containers made from such material. The first license under this patent to combine the materials has been granted to the Lily-Tulip Cup Corp.

This inexpensive combination of polystyrene foam and paper provides a material which is waterproof, greaseproof, has a high thermal insulation factor, is chemically inert and non-abrasive. These properties should result in many applications in the converting field.

The polystyrene foam assumes additional strength when the foam is laminated to paper. It gains the inherent strength of the paper which can be manufactured in a wide variety of weights, strengths, and treatments. The insulation qualities of the material lend themselves to application in the drinking cup and food packaging fields. The greaseproof and waterproof factors are also important in food packaging. Highly polished articles can be packaged in this non-abrasive material without danger of scratching.

Northwest Paper Co. to Introduce New No. 1 Line

A new line of No. 1 writing grades, including watermarked bond, mimeo bond, duplicator and ledger will be introduced to paper merchants by Northwest Paper Co. at the fall NPTA convention in Chicago, according to C. P. Sheldon, vice president and general sales manager.

Featuring a newly designed true watermark and improved standards, the new line will offer bond in 13 new colors in addition to white and all four of the new grades in a greater variety of stocking sizes and weights.

Keep your eye on our Classified Advertising Section

Northwest Paper Co. will make the new grades in its mill at Cloquet, Minn.

TAPPI Releases Tentative Engineering Conf. Program

A detailed tentative program for the 15th Engineering Conference, sponsored by the Technical Ass'n. of the Pulp and Paper Industry was released recently.

The conference will be held October 24-28 at the Robert Meyer Hotel, Jacksonville, Fla. The program will consist of 18 technical sessions with 52 technical papers and panel discussions to be presented, according to Technical Program Chairman V. P. Owens, Combustion Engineering, Inc.

The program follows.

MONDAY, OCTOBER 24

Electrical Engineering

Chairman: S. Anderson, West Virginia Pulp & Paper Co., New York, N. Y.

"Electrical Problems in the Use of Purchased Power in Paper Mills"—J. Davey, Louisiana Power & Light Co.

"End Thrust Problems and Considerations of Flexible Coupled Motors."

Chemical Engineering I (Process)

Chairman: Arthur W. Plummer, Hudson Pulp & Paper Corp., South Windham, Me.

"Final Report, Measurement of Humidity in Presence of SO_2"—W. R. Marshall, Jr., University of Wisconsin.

"Continuous Freeness Recording Controller"—G. A. Chedomir, Kimberly Clark Corp., Neenah, Wis.

"The Effect of Some Organic Substances on Oxygen Absorption in Bubble Aeration"—S. A. Zieminski, C. C. Goodwin & R. L. Hill, University of Maine.

Fluid Mechanics I

Chairman: C. A. Lee, Formex Co. Div. of F. C. Huyck & Sons, Knoxville, Tenn.

"The Physics of Flow Through Porous Media"—A. E. Scheidegger, Imperial Oil Research Lab., Calgary, Alberta.

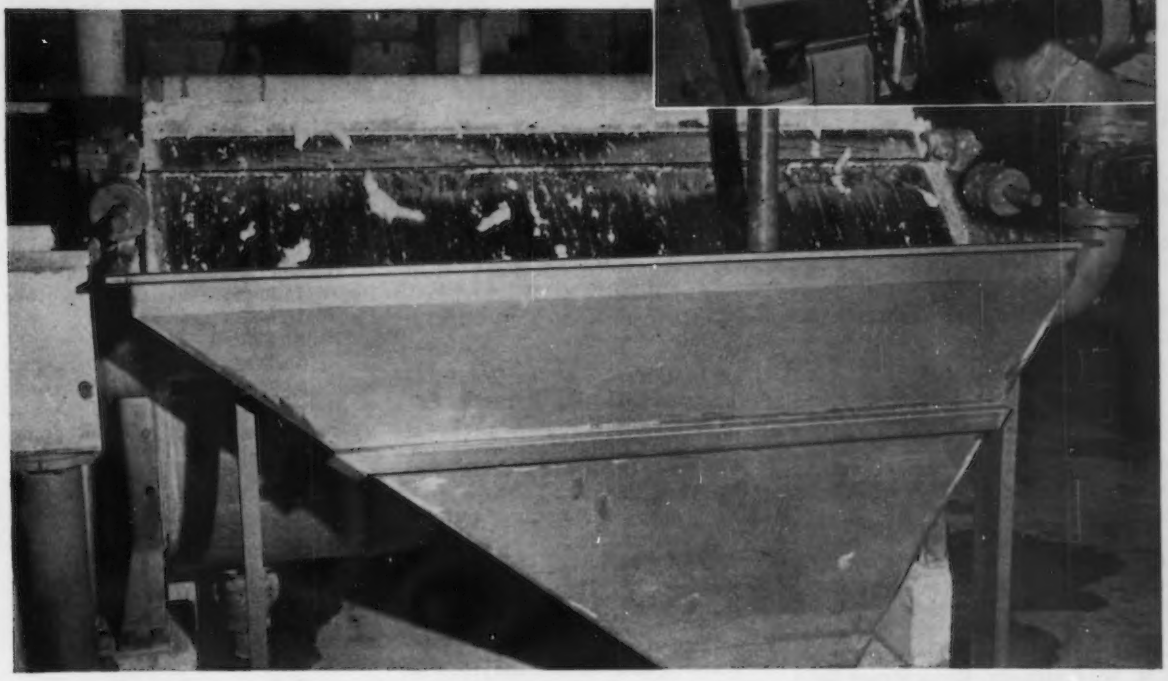
"Resistance of Wire Screens to Flow of Water"—W. L. Ingmanson, S. T. Han & W. T. Myers, The Institute of Paper Chemistry.

"Drainage in a Rotary Vacuum Former"—S. T. Han, The Institute of Paper Chemistry.

"The Creep Properties of Wet Pulp Mats Under Compression"—H. D. Wilder, The Institute of Paper Chemistry.

Any way you look at it...

THIS SAVING IS TOO GOOD TO PASS UP



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CANADIAN INGERSOLL-RAND COMPANY Ltd., Montreal

BIRD SAVE-ALLS

Chemical Engineering II
(Operations Research)

Chairman: E. F. Thode, The Institute of Paper Chemistry.

"Introductory Remarks"—Techniques Must Not Obscure Problems —E. F. Thode, The Institute of Paper Chemistry.

"Linear Programming"—R. W. Van Duyne, West Virginia Pulp & Paper Co., New York, N. Y.

"Response Surface Techniques"—C. W. Carroll, Scott Paper Co., Chester, Pa.

"Simulation" — W. E. Winans, International Business Machines, Green Bay, Wis.

TUESDAY, OCTOBER 25

Drying I (High Velocity Air)

Chairman: S. G. Holt, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.

"Fundamentals of Impingement Air Drying"—C. Allander, AB Svenska Flaktfabriken.

"On The Theory of Impingement of Air Drying"—S. T. Han, The Institute of Paper Chemistry.

Panel Discussion "Use of High Velocity Air Impingement in Drying."

Maintenance

Chairman: H. M. Reed, Jr., International Paper Co., Mobile, Ala.

"Reducing Down Time on your Recovery Unit"—C. Johnson, International Paper Co., Panama City, Fla.

"Planned Maintenance for Kraft Recovery Boilers"—E. L. Rivenbark, International Paper, Mobile, Ala., and C. P. Elmore, Babcock and Wilcox Co.

"Maintenance Training Programs" —H. W. Smith, St. Regis Paper Co., Jacksonville, Fla.

"Paper Mill Rubber Covered and Steel Roll Grinding & Maintenance Procedures"—B. B. Pierce, Crown Zellerbach, Bogalusa, La.

"Electric Maintenance Systems" —H. M. Reed, Jr., International Paper, Mobile, Ala., and F. J. Hrabak, Reliance Elect. & Engr. Co., Cleveland, Ohio.

WEDNESDAY, OCTOBER 26

Chairman: J. S. Mudgett, Strathmore Paper Co.

more Paper Co.

"Uniform Nip Loading Control of Machine Calenders"—J. E. Perkins, Black Clawson Co., Middletown, Ohio, and G. Luebke, Marathon Corp., Menasha, Wis.

"Machine Calender Roll Crowns & Pressure Distributions" — J. W. Riese, Kimberly Clark Corp., Neenah, Wis.

"Mechanical Design and Installation Requirements of Trailing Blade Coater Equipment"—J. P. Munton, Rice Barton Corp., Worcester, Mass.

Construction Engineering

Chairman: W. Pittam, Stone & Webster Engineering Co., Toledo, Ore.

"Outfall Lines into Large Bodies of Water"—W. Pittam, Stone & Webster Engineering Co., Toledo, O.

"Design of Machinery Foundations"—W. Swiger.

"Symposium on Construction Problems."

Drying (II) Radiant Drying

Chairman: R. C. Swaney, Carlisle, Pa.

Panel Discussion: "The Use of Radiant Heat for Drying."

"Technical Aspects of Radiant and Infra Red Energy"—F. J. Prince, Perfection Div. of Hupp Corp., Cleveland, Ohio.

"Theory of Radiant Heat Drying of Paper"—E. S. Mack, Asheville, N. C.

"Applications of Radiant Heat Drying of Paper"—O. Wagner, Perfection Div. of Hupp Corp., Cleveland, Ohio

Engineering Economics

Chairman: G. W. Sargent, Jr., Mercury Engr., Milwaukee, Wis.

"Realistic Budget Control for Large Scale Contracts"—J. G. Nagro, M. W. Kellogg Co.

"Economics of Moisture Control" —W. A. Smiley, Electric Eye Equip. Co., Danville, Ill.

Sanitary Engineering

Chairman: W. A. Moggio, St. Regis Paper Co., Rhinelander, Wis.

"Water Conservation and Re-Use in Industry"—R. D. Hoak, Mellon Institute.

"Decolorization of Water with Special Reference to the Pulp & Paper Industry"—S. T. Powell & L. G. von Lossberg, S. T. Powell & Assoc., Baltimore, Md.

Fluid Mechanics (II)

Chairman: C. A. Lee, Formex Co. Div. of F. C. Huyck & Sons, Knoxville, Tenn.

"Unsteady Flow Due to Wire Shake"—A. C. Spengos, Scott Paper Co., Chester, Pa.

"Function of Flo-Vac Rotary Suction Box on Fourdrinier Machines" —V. C. Hill & C. L. Clark, Clark & Vicario Corp.

Final Report on TAPPI Project No. 156—"Free Surface Instability" —C. S. Yih & W. R. Debler, Univ. of Michigan.

"Friction Loss of Paper Stock Through Pipe Fittings"—K. J. MacKenzie, Eastman Kodak Co., Rochester, N. Y.

THURSDAY, OCTOBER 27

Steam & Power

Chairman: H. R. Emery, St. Regis Paper Co., Jacksonville, Fla.

"Water Treatment for Boilers Operating in the 600-1250 lb. Range with High Make-up"—L. Limon, Graver Water Conditioning Co., N. Y., and R. A. Dando, St. Regis Paper Co., Deferiet, N. Y.

"Why The Power Plant Personnel Should Supervise & Operate the Recovery Unit"—H. R. Arnold, Continental Can Co., Greenville, S. C.

Panel: "Training of Power Plant Personnel." Moderator: T. F. Woodward, Scott Paper Co., Detroit, Mich. and Panel Members: M. S. Ginter, Dow Chemical Co., R. M. Van Duzer, Detroit Edison, J. W. Herrington, Buckeye Cellulose Corp.

Corrosion — (I)

Chairman: E. W. Hopper, Pittsburgh, Pa.

"Ductile Iron for the Pulp and Paper Industry"—E. G. Holmberg, International Nickel Co., Inc.

"Plastics and Plastic Films"— R. E. Gackenbach, American Cyanamid Co.

"Materials of Construction for a Bleached Kraft Mill"—J. M. Japp, Columbia Cellulose Co., Ltd., Vancouver, B.C.

Industrial

"Storage and Handling of Clay"— H. A. Stoess, Jr., Fuller Co.

"New Concepts for Automated Roll Handling"—S. Sundahl & C. H. Eithel, Union Bag Camp Corp.

"Sheet Finishing" — R. Carter, Crown Zellerbach Corp., West Linn, Ore.

Process Instrumentation

Chairman: J. K. Powell, Bowaters Southern Paper Co.

"The Principles of On the Machine Moisture Measuring Systems" —R. B. Hurm, Beloit Iron Works.

"Then & Now, Pulp & Paper Control & Measurements, 1906 to 1960" —E. J. Trimbey, Trimbey Machines, Inc.

"The Outlook of the Control Engineer"—D. P. Michel, The Bauer Bros. Co., Springfield, Ohio

Corrosion (II)

Chairman: E. W. Hopper, Pittsburgh, Pa.

"Regional Report on Alkaline Digester Corrosion"—H. M. Canavan, Mutual Boiler & Machinery Insurance Co., Waltham, Mass.

"Open Discussion on Overlay"

PJT NEWS OF CONVERTERS

Roger Geartz

Con. Can Names Manager At Cleveland Box Plant

Roger Geartz has been promoted to manager of the Continental Can Co. corrugated box plant in Cleveland, Ohio, it was announced by C. U. Harvey, central district general manager of the company's Fibre Drum and Corrugated Box Division. Mr. Geartz replaces F. W. Locke, who has resigned.

In his new capacity, Mr. Geartz will also be responsible for the operations of the firm's corrugated box plant in Plymouth, Mich. He has been with Continental and the premerger Robert Gair Co. for 19 years, the last two of which were spent as general foreman and plant superintendent at Plymouth.

Container Corp. Announces Promotions

Container Corp. of America has announced the following appointments:

Harry F. Drnec has been appointed the Chicago district sales manager for solid fibre operations;

William P. Peters has been named general manager of research and development for the folding carton and boxboard divisions;

Benjamin A. Ruf replaces Mr. Peters as general manager of the company's folding carton operation in Renton, Wash;

Wallace R. Soli has been promoted to sales manager at the Renton plant, succeeding Mr. Ruf;

L. N. Goldmann has been named sales manager of the Santa Clara, Calif., folding carton plant.

Previously, Mr. Drnec was manager of the company's machinery development department. He joined Container Corp. in 1945 as development engineer.

Mr. Peters joined Container as a packaging engineer in 1947. Most recently, he has been general manager of the company's folding carton operation in Renton, Wash.

Mr. Ruf joined the company in 1949 after his graduation from Syracuse University. He was appointed sales manager of the Renton plant in March 1955 and has served in that capacity until now.

Mr. Soli is a graduate of the University of Washington and has been with the company since 1953 when he joined as a packaging engineer. For the past year, he has been assistant sales manager at the Renton plant.

Mr. Goldmann has been assistant sales manager at the Santa Clara plant for the past four years. He joined the company in 1952.

Guy Joins St. Regis At Kansas City Plant

Ray Guy has resigned his position as manager of the Chase Bag Co. plant in Crossett. He will become production manager of the Kansas City plant in the central region of St. Regis Paper Co.

Fisher to Head Up New SFI Container Div.

W. S. Fisher, president and general manager of Accurate Corrugated Specialty Corp. and Arrow Board Corp., Los Angeles, subsidiaries of Southwest Forest Industries, Inc., has been named to head up the newly created container division of Southwest Forest Industries, Inc. Headquarters of the division will be in Los Angeles.

At the same time, Mr. Fisher announced that Accurate and Arrow will be combined with the Southwest Corrugating Plant in Glendale, Ariz., and will operate as Southwest Forest Industries, Inc., Container Division.

Joe D. Cox, who headed Southwest's Glendale plant, will be in charge of sales for all plants in the newly formed container division.

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PAPER PEOPLE

A. T. Easley

L. W. Miller

Fraser Companies Appoint Executives

A. T. Easley has been appointed manager-marketing of Fraser Companies, Ltd., and its subsidiary, Fraser Paper, Ltd. In this position Mr. Easley will have jurisdiction over sales of the company's pulp, paper, and paperboard.

A native of Chicago, Ill., Mr. Easley was successively general traffic manager of a trucking company, eastern division production manager of International Milling Co., and in charge of four northern New York mills of St. Regis Paper Co. He then became first resident manager of the sulphate pulpmill of North Western Pulp & Power, Ltd., Hinton, Alta. In 1958 Mr. Easley joined Fraser Companies as assistant to the general manager.

Logan W. Miller has been appointed general sales manager of Fraser Paper, Ltd., at New York. He succeeds J. R. Cryan in this position.

Mr. Miller began his career in the paper industry with a merchant paper firm in Chicago from 1928-34. In September 1934 he joined the Fraser organization as an order clerk in the Chicago sales office, becoming a salesman in 1937. In 1950 he was named asst. sales manager of the Cleveland office, becoming district manager in 1952. The following year he moved to the Chicago office where he was district sales manager. In 1957 he was named western sales manager of the company, the position he held prior to his new appointment at New York.

Tobin to Manage PCA Vincennes Paperboard Mill

W. R. Tobin has been appointed general manager of Packaging Corp. of America's paperboard mill in Vincennes, Ind.

Mr. Tobin formerly was sales manager—mill products for PCA's paperboard mill in Grand Rapids, Mich. He also has held the positions of chemist, research and development manager, technical superintendent and assistant sales manager—mill products, for the American Box Board Co. in Grand Rapids in the course of a career that started in 1936. He is a chemical engineering graduate of Mich. State University.

Grace y Cia Chooses General Sales Manager

John C. Hunt, Jr., has been named general sales manager of Grace y Cia, Puerto Rico. This company operates a pulp and paper mill as part of the W. R. Grace & Co. Latin American paper operations.

Following his graduation from the University of Washington, Mr. Hunt served in the Air Force from 1942-1945 and rose to the rank of Major. After World War II, Mr. Hunt joined Rheem Manufacturing Co. as sales manager.

From 1949 until 1956 Mr. Hunt was vice president-sales and general manager, subsidiary companies, of the Krafco Container Corp., Dallas, Tex. During this period he was on Krafco's Executive Committee, and served as board member and officer of several Krafco subsidiaries.

Since 1956 Mr. Hunt had been an independent business consultant.

I-P Announces Promotions at Mobile Mill

Alex C. Hancock, an employe of the International Paper Co. since 1948, has assumed the duties of plant engineer of the company's Mobile mill. Quinlan T. Rosenblath, Jr., has been promoted to assistant chief electrician of the Mobile mill.

Mr. Hancock, an Auburn graduate, has been serving as first assistant chief electrician.

Mr. Rosenblath, a graduate of Louisiana Tech, joined International in 1950. Prior to this last promotion he has been serving as assistant manager of the Mobile bag factory.

W. C. Froude, Jr.

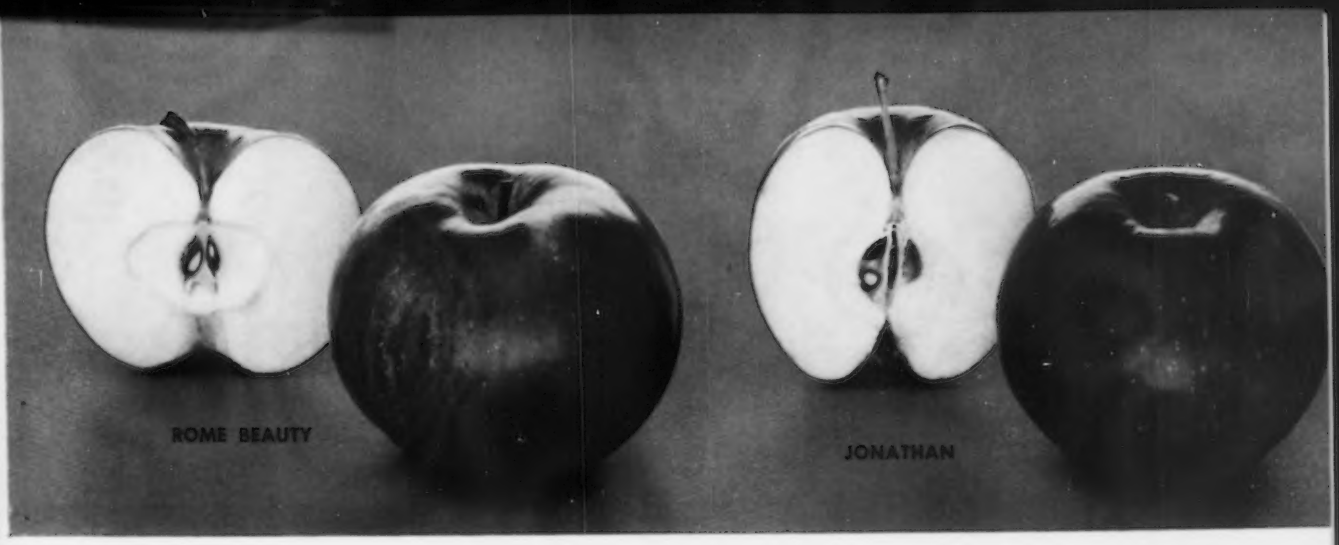
Northeastern Paper Sales Adds to N. Y. Staff

William C. Froude, Jr., has joined the New York office of Northeastern Paper Sales, Inc. Mr. Froude will assist Victor R. Coudert, Jr., in pulp sales for the eastern areas of the United States.

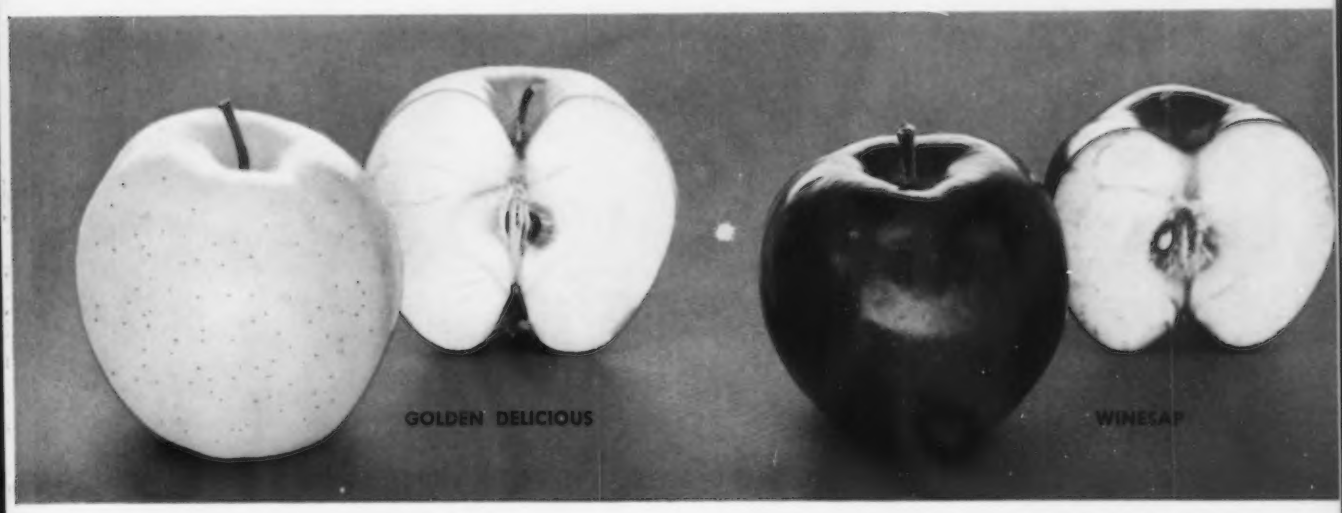
A native of New Jersey and a graduate of Rutgers University, Mr. Froude was with Arabol Manufacturing Co. for three years; and Air Reduction Sales Co. for two years.

Great Northern Announces Executive Promotions

The Great Northern Paper Co. has promoted Arthur E. Dentremont to production superintendent at East Millinocket. Mr. Dentremont has held several positions with Great Northern after being employed in 1951 after graduating from the University



Letterpress with polish . . . on RHOPLEX coated paper



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As a papermaker, you'll like the way RHOPLEX emulsions perform when you use them as binders in your coatings. You can use RHOPLEX for on- or off-machine coatings applied by trailing-blade, air-knife, or roller coaters. You can apply high-solids coatings at high speeds, because RHOPLEX formulations with solids as high as 65 percent can still have good handling viscosity. Under heat and pressure, RHOPLEX coatings level out and take on a high degree of gloss because the polymer in the binder is thermoplastic . . . something you don't get with coatings using natural binders.

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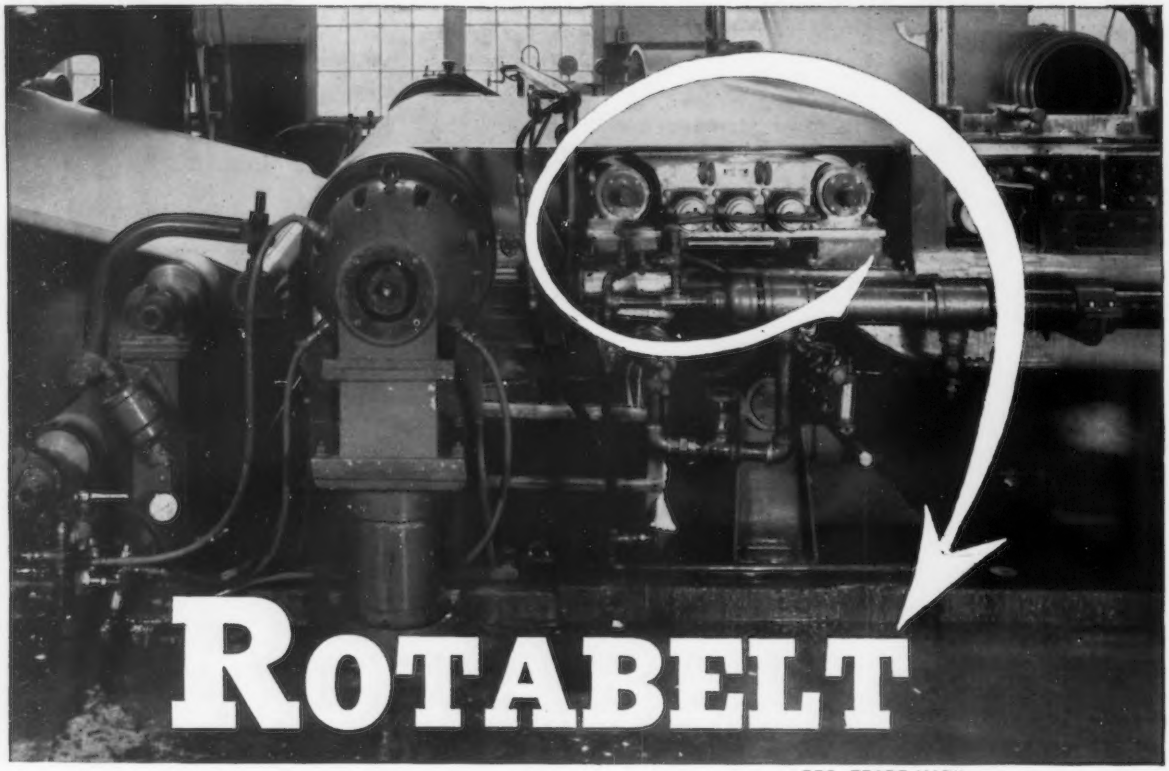

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DRAPER BROTHERS COMPANY
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of Maine. He has successively been a chemical engineer, night superintendent, and control superintendent at the East Millinocket mill.

Roy Y. Illingworth has been promoted from chief chemist of the company to the position of control superintendent. Mr. Illingworth joined Great Northern in 1947 as an assistant chemist after graduating from Colby College. In 1951 he was promoted to acting chief chemist and became chief chemist in 1952.

M. A. LeFevre

Fletcher Paper Names Technical Director

Milton A. LeFevre, with a background of more than 20 years of varied experience in the paper industry, has become technical director at the Fletcher Paper Co., Tom G. Fletcher, company president, has announced.

Mr. LeFevre will be responsible for quality control and for new products.

Mr. Fletcher also announced the formal retirement of Fred R. Trelfa, the company's secretary-treasurer, after 40 years of service. Ronald Werner was named to succeed Mr. Trelfa in that post at a recent meeting of the board of directors.

Westminister Paper Promotes Executives

John Ashby, executive vice-president of Westminster Paper Company, Ltd., has announced the appointments of J. S. Gilham as manager of technical services, fine papers; C. N. Hagar as plant manager, Crabtree Mills Division, and M. A. Bailey as assistant plant manager, Crabtree Mills Division.

Mr. Gilham, well known in the industry for many years through his activities at Crabtree Mills, in assuming the newly created post of manager of technical services for fine papers, will make his headquarters at the company's Montreal office.

Mr. Hagar has been assistant manager of Crabtree Division and formerly was technical director of the Westminster Division.

Mr. Bailey has been paper mill superintendent in the Westminster Division and now will be located at Crabtree Mills.

Four Promoted at Rhinelander Paper Co.

George Sutton has been appointed senior assistant paper mill superintendent at the Rhinelander Paper Co., division of St. Regis Paper Co. Mr. Sutton came to Ripco in 1917 as a spare hand on the paper machines. He operated No. 3 paper machine for a period of 10 years, then served as a shift supervisor in the machine room, night paper mill superintendent and day supervisor on the paper machines. In 1959 he became assistant paper mill superintendent.

James Dunlap has become assistant paper mill superintendent at Ripco and will work with Mr. Sutton under the direction of Leonard Parkinson, paper mill superintendent. Mr. Dunlap entered Western Michigan University and enrolled in the Pulp and Paper School of Technology, graduating with a B.S. degree in 1953. He joined Rhinelander in September 1955 as a project chemist in the main laboratory and in 1958 was promoted to waste control super-

BEING PRESENTED first prize for his Bolton Award essay on the subject "Through the Grapevine" is Robert A. Bagg (left) Strathmore Paper Co., by A. L. Bolton, Jr. (right), of John W. Bolton & Sons, while F. Nelson Bridgham (2nd from left), Strathmore president, and John E. Benedict, Bolton-Emerson representative, look on.

visor. After serving in this capacity for approximately one year, he was promoted to assistant to the paper mill superintendent.

Richard Rasmussen, assistant to the director of industrial relations since 1955, was promoted to personnel manager and will continue to report to L. J. McNamara, director of Industrial relations.

Elton T. Krogel has assumed the duties of assistant pulp mill superintendent. Mr. Krogel is responsible for the operation of the pulp manufacturing and water treatment facilities and reports to S. E. Ekman, pulp mill superintendent. He attended Western Michigan University, Kalamazoo, Mich., as a member of the University's first class in pulp and paper technology.

Thilmany Fills Newly Created Posts

Appointment of two men to fill newly created positions in the financial division of Thilmany Pulp & Paper Co., Kaukauna, Wis., have been announced.

Joseph Steger was named budget director, with responsibility for developing budgets in cooperation with the sales and manufacturing divisions. He will report to the company's controller, R. V. Allen. Mr. Steger has been with Thilmany for 12 years, most of them in the accounting department.

Donald Beno was named data processing supervisor. Mr. Beno, a graduate of St. Norbert's College, had been data processing supervisor at the Harnishfeger Co. Escanaba plant prior to being employed by Thilmany to fill this position.

Vincent Gilpin, Jr.

Downington Paper Names New Sales Manager

Appointment of Vincent Gilpin, Jr., to the position of sales manager has been announced by Downingtown Paper Co. Paperboard Division. He succeeds William J. Mahood who died unexpectedly on June 24.

Mr. Gilpin previously occupied the position of marketing research manager for the company's two divisions, paperboard and packaging, and has been associated with the Downingtown firm for the past five years. He is a graduate of Haverford College.

Mosinee Paper Mills Expands Sales Force

Mosinee Paper Mills Co. has expanded its sales force by adding another man. He is Don N. Murphy of Springfield, Ill. Mr. Murphy will cover Missouri, Kansas, southern Illinois and other southern areas for Mosinee. He will headquarter in Springfield under Mosinee's Chicago district office.

Prior to joining Mosinee, Mr. Murphy spent a total of 21 years with Charmin Paper Products. He had been district manager in Illinois for the past 13 years.

John E. Howland, whose sales territory included the area which will now be covered by Mr. Murphy, has been transferred to the Mosinee district office. He will work under F. P. Stone, district mgr., as a sales representative and on special projects.

From ALBANY FELT.....

Felt Facts

"Locked In" Protection Against Bacterial Damage with . . .

W-6

CHEMICAL TREATMENT

Bacterial damage may be a serious problem in felt operation.

Some time ago, our research department developed a great many bactericidal formulas and finally created an entirely new treatment we named W-6.

The effectiveness of W-6 lies in the fact it is "locked in" chemically in the felt fibres and is designed to provide permanent protection against bacteria attack for weeks . . . even months.

Equally important, the addition of W-6 does not affect the sheet nor the operating characteristics of the felt.

If you have a bacteria problem . . . or even suspect one . . . why not investigate the Albany Felt W-6 chemical treatment?

LABORATORY ANALYSIS

Laboratory examination is the only way you can determine if your felts are being damaged by bacteria. Our Customer Service Laboratory is available to you for this analysis.

Have our Sales Engineer send samples of your used felts and we will provide you with a written report of our findings.

TALK IT OVER WITH YOUR ALBANY FELT SALES ENGINEER

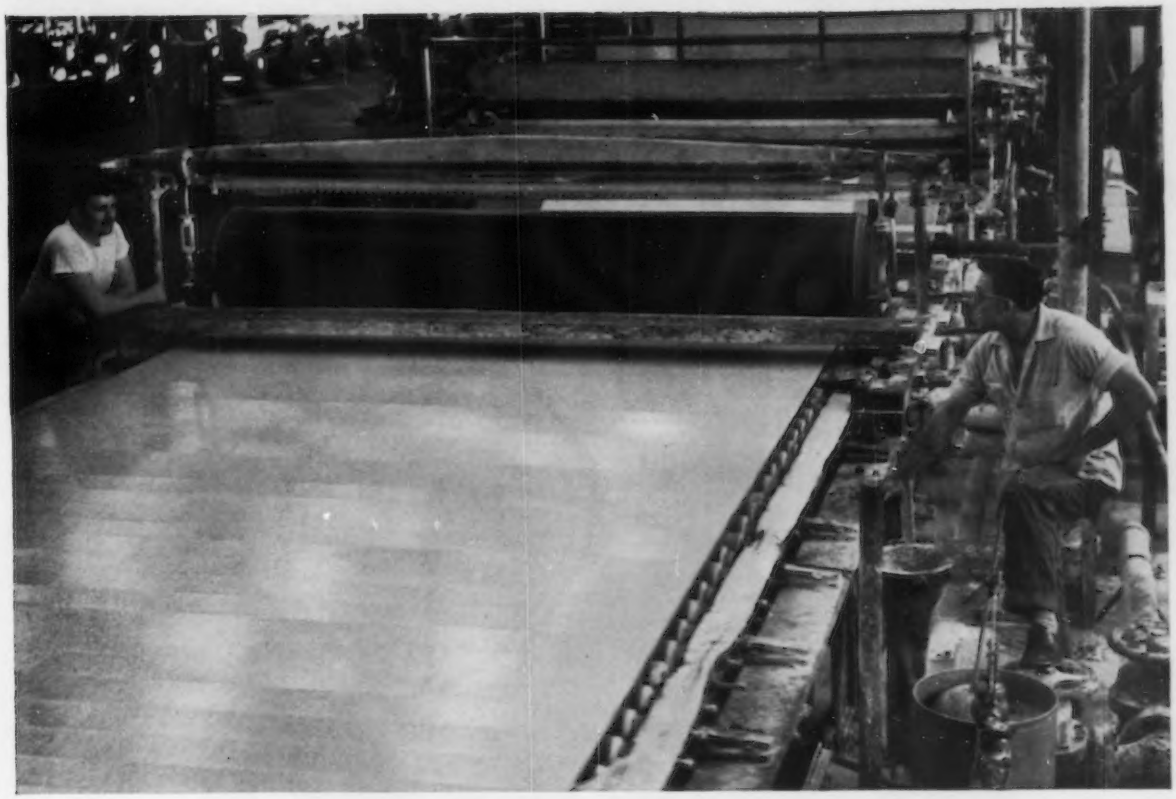
AF

ALBANY FELT COMPANY

ALBANY, N. Y.

World's Largest Manufacturer of Paper Machine Felts

Papermakers Throughout the Northeast Look to TYER for Rubber Covered Rolls

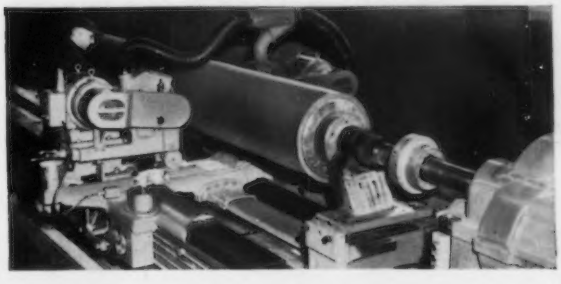


Research plus service makes the difference

More and more papermakers throughout the Northeast are finding that it pays to do business with Tyer.

With facilities to handle the industry's largest rolls, this hundred-year-old company is building an enviable reputation for service.

Newly developed Tyer roll compounds such as Tyerock and Tyerstone super-hard press rolls, Tyershed table rolls, and special roll formulas for use where rolls are subject to attack by chemicals and high temperatures are a result of Tyer's intensive research and developments.



If you are a papermaker in the Northeast, don't overlook the many advantages that Tyer offers you in the way of extra quality and service.

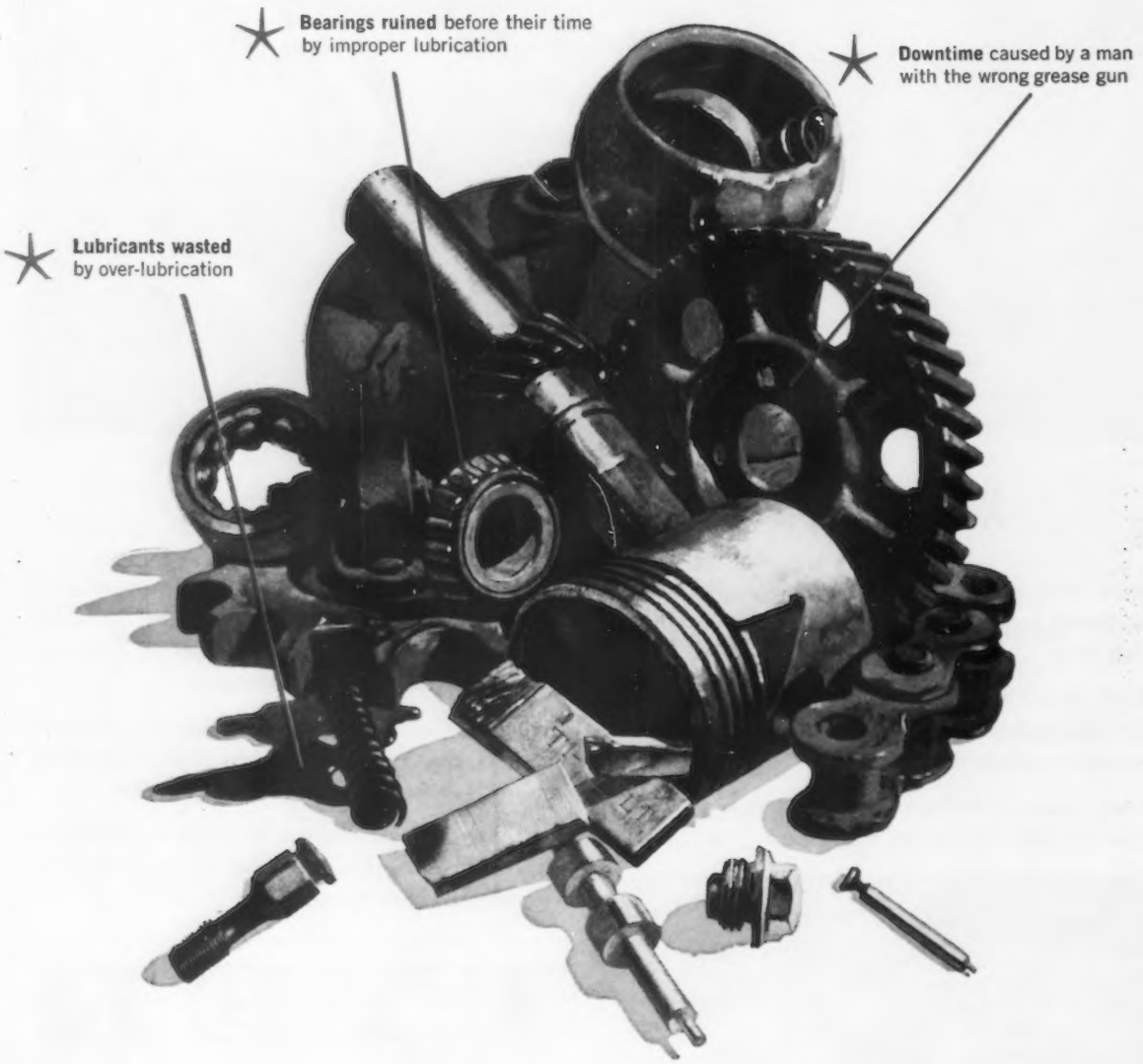
Your Tyer Sales Engineer is ready to help you with Rubber covered roll problems of any description. Be sure to call him.

TYER

Tyer Rubber Company, Andover, Mass.

ANNOUNCING THE TEXACO "Stop Loss" Program

Created to starve a scrap pile at its source . . . and all it represents ★


★ **Bearings ruined** before their time by improper lubrication
★ **Downtime** caused by a man with the wrong grease gun
★ **Lubricants wasted** by over-lubrication

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

Even though your mill is *already* an efficient operation, a Texaco "Stop Loss" Program can yield important savings in maintenance, production, purchasing and inventory.

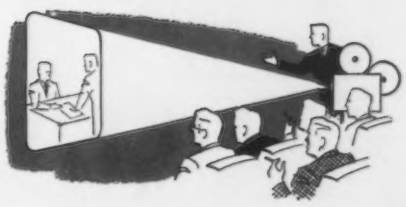
What it is; why it will work for you. The Texaco "Stop Loss" Program is a complete package specifically designed to modernize your lubrication practices–to keep pace with your updated production and marketing procedures. "Stop Loss" is based on our years of experience in organizing lubrication in industry.

If yours is an average mill, the adoption of this program will actually show up on your profit sheet. That's because the savings from "Stop Loss" go *directly* into net profits.

Lubrication, far from being an expense item, is actually one of your most effective cost control tools!

HERE'S WHAT YOU NEED TO HELP STARVE YOUR SCRAP PILE

These components of the Texaco "Stop Loss" Program are available to interested mill groups:



1. New 20-minute sound-color film "Stop Loss with Organized Lubrication"–created to show the many opportunities for cost control through organized lubrication practices.

2. A Lubrication Control System that takes the guesswork out of lubrication scheduling. It costs almost nothing to install, yet can save as much as 15% of your maintenance costs.

3. A film "package" for mill departments. This consists of educational films that cover the selection and application of greases, hydraulic oils, cutting oils, etc.

4. Co-ordinated booklets on the film subjects plus many others that can be used as guides in specific areas.

We believe that a modern Texaco "Stop Loss" Program will produce a package of economies in your mill.

MAKE YOUR RESERVATION TODAY
to see one of the year's most important management movies!

TEXACO
Throughout the United States
Canada • Latin America • West Africa

TEXACO INC., Dept. PT 11
135 East 42nd Street
New York 17, N. Y.

Please arrange a showing of "Stop Loss" at my mill.

Name_____

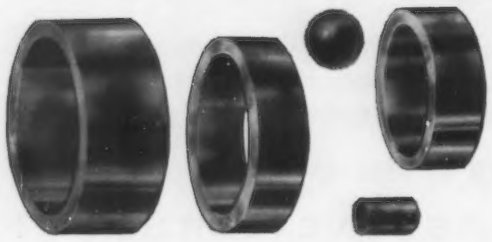
Title_____

(Please attach to your letterhead)

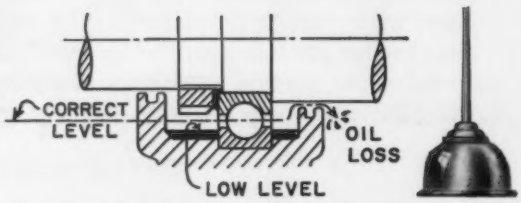
DISTRIBUTOR DAN, the SKF bearing man, tells

WHY BEARINGS BECOME OVERHEATED

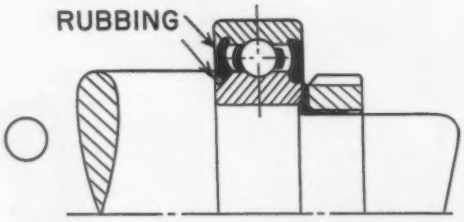
and how to correct the conditions that cause excessive heat.



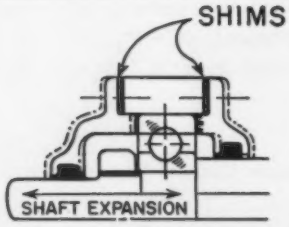
LOOK FOR THIS SYMPTOM. Discoloration of a bearing's rings, balls or rollers is a sure sign of overheating. The color is usually a gun-metal blue or bluish black.



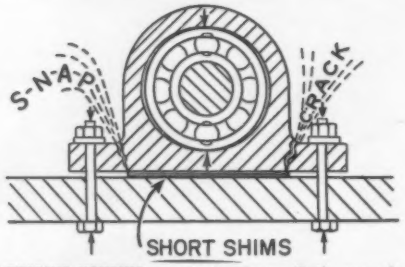
IMPROPER LUBRICATION OR LUBRICANT accounts for most cases of overheating. In pillow blocks, if oil is specified, fill only to the center of the lowest ball or roller in the bearing. If it's grease, the lower half of the pillow block should be filled. Therefore, be sure you're using the right lubricant—**in the proper quantity.**



RUBBING is a frequent culprit. Check the running clearance of the bearing seal. If it rubs against the shaft shoulder, re-machine the shoulder, to allow proper clearance. Bent lock-washer prongs are sometimes to blame. Straighten them or replace the washer.



EXTERNAL HEAT, conducted through the shaft, can make an inner ring expand excessively. It's usually the result of using a bearing with inadequate internal clearance. Make sure the replacement bearing is exactly the same as the original bearing. Should the markings be indistinct, consult an **Authorized SKF Distributor.**



THE BEARING HOUSING may be to blame—if it's warped or if the bore is distorted and out-of-round. Check to see whether the bore is pinching the bearing and relieve by scraping the bore. Make sure, too, that the pedestal surface is flat and that any shims cover the entire base area.

Baffled by a bearing problem? Whether it's selection, mounting, or maintenance—consult your Authorized SKF Distributor. He's staffed to help you keep them running smoothly and he stocks all the bearing types and sizes you need.

SKF

AUTHORIZED DISTRIBUTOR

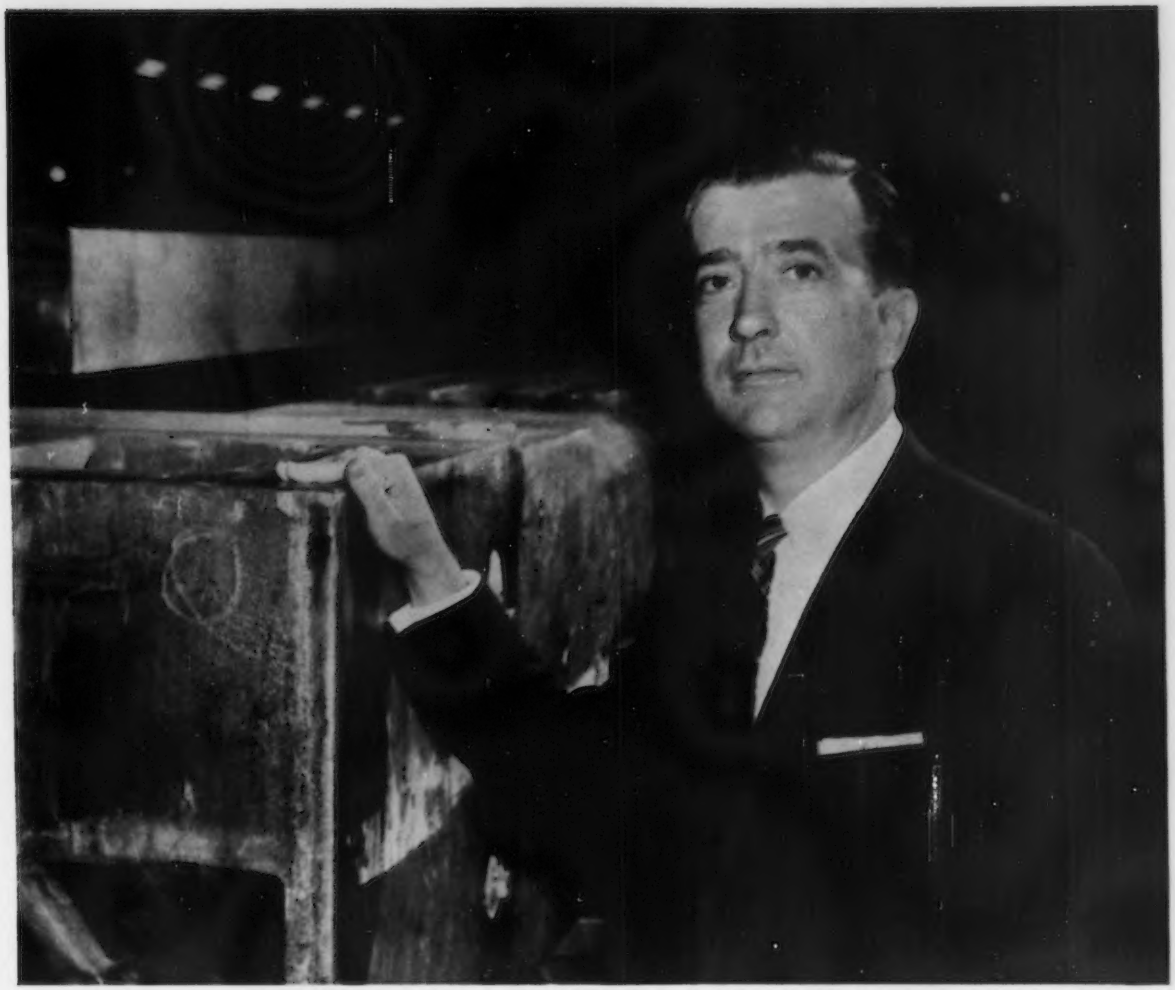
Spherical, Cylindrical, Ball, Timken® Tapered and REED Miniature Bearings

EVERY TYPE—EVERY USE

SKF®

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

®REG. U. S. PAT. OFF.



S. R. CHRISTENSEN

Beloit Eastern's John Walsh

The day-to-day operation of a modern plant is an exacting job, one that requires men with diverse skills and wide experience. John Walsh, vice president and general plant manager of Beloit Eastern Corporation, is such a man. Well versed in all facets of plant management, he is in a position to see that each job receives the individual attention necessary to building the finest and most efficient of mill equipment. Your Beloit Eastern products have that "something extra" because John and his staff of experts are on the job. Look to Beloit Eastern to furnish you with the finest in finished product processing equipment.

FINISHED PRODUCT PROCESSING EQUIPMENT

Winders • Petite Winders • Slitters Supercalenders • Roll Wrappers Roll Lowering Tables • Roll and Shaft Handling Equipment • Conveyors Unwind Stands and Tru-Tension Controls • and other equipment for the paper and allied industries.

BELOIT EASTERN PAPER MACHINERY DOWNINGTOWN, PENN.

Member Beloit Group

BELOIT EASTERN CORPORATION

DOWNINGTOWN, PENNSYLVANIA

Leadership in Paper Making Chemicals

WHEN SHE'S A GREAT-GRANDMOTHER THIS BOOK WILL BE "LIKE NEW"

Books like "Sleeping Beauty" have been bringing a smile to children's faces for generations. But the casualty rate is high . . . continual reading soon takes its toll and the book must be replaced.

Now there is a way to manufacture book paper that will last as long as 300 years under the conditions of everyday use. This paper was developed by the well-known restorer of documents, W. J. Barrow, under a grant to the Virginia State Library by the Ford Foundation's Council on Library Resources.

Only an alkaline-sizing agent could be used, and Aquapel® sizing agent was the logical choice. Aquapel is more than a conventional paper size. It becomes an integral part of the paper. Since it is on the alkaline side, the paper is stronger and more durable.

Paper Makers Chemical Department
HERCULES POWDER COMPANY
INCORPORATED
900 Market Street, Wilmington, Delaware

PP60-4

'BUFFALO' SINGLE SUCTION PUMPS

PUMPING APPLICATIONS: ● Clear water ● Saturated refrigerants ● Chemicals ● General Service

ADVANTAGEOUS FEATURES: ● Interchangeable parts ● Full ball bearing construction—takes speeds to 3500 rpm. ● Durable solid shell ● Efficient design ● Available in most machineable alloys

Few pumps are so adaptable to so many jobs. For capacities from 5 to 1200 gpm, they are the answer from clear water supply to handling an acid solution. High-speed ball bearing design often means selection of a smaller size for a given volume. Durable overall construction means low costs over the long pull, too. Write today for Bulletin 976 and see how profitably you can put these almost universal pumps to work!

"Buffalo" PUMPS

BUFFALO PUMPS DIVISION OF BUFFALO FORGE COMPANY
Buffalo, N. Y.

Buffalo air handling equipment to move, heat, cool, dehumidify and clean air and other gases.

Buffalo Machine Tools to drill, punch, shear, bend, slit, notch and cope for production or plant maintenance.

Buffalo Centrifugal Pumps to handle most liquids and slurries under a variety of conditions.

Squier machinery to process sugar cane, coffee and rice. Special processing machinery for chemicals.

Unique Automatic Roll Handling System In Operation at St. Joe Paper Co.

Handling up to 1200 tons per day this overhead monorail conveyor carries rolls of linerboard and corrugating medium nearly a quarter of a mile from the finishing operation to a new warehouse.

Paul D. Van Derveer,
Associate Editor,
Paper Trade Journal

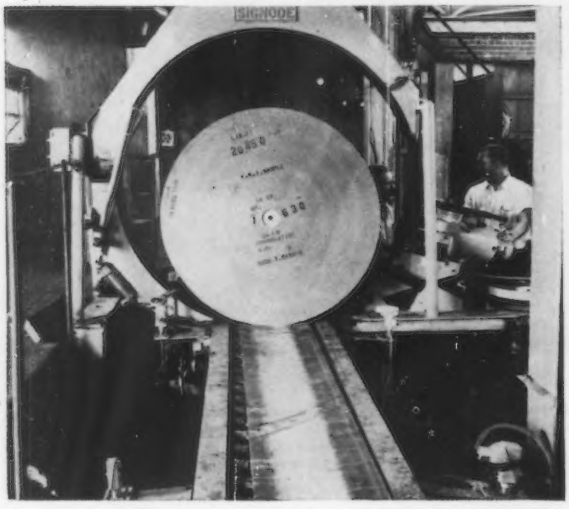
Part of a continuing improvement program, an interesting new automatic roll handling system has been installed at St. Joe Paper Co., a firm with a forward looking aggressive management that has brought new prosperity and growth to a once obscure area. This firm, located on the Gulf of Mexico at Port St. Joe, Fla., began operations here in 1938. The mill itself has grown considerably since then, but even more important it has brought other industries into the area. One firm located here refines tall oil from St. Joe's black liquor skimmings; another produces alum with St. Joe a prime customer.

Now, another new plant is being located here adjacent to St. Joe Paper Co. It will be a $13½ million, continuous process NSSC pulp mill utilizing hardwoods and will be known as the Florida Gulf Fibre Co. Tom Coldewey, St. Joe vice president, isn't saying who the owners are, but states that it is owned by six different companies, will produce 400 tons per day of captive tonnage. The paper machine will be a 236 inch Beloit fourdrinier.

As the industrial center at Port St. Joe grows, St. Joe Paper Co. keeps pace with a continuous program of modernization and expansion. Most recently, additions to the plant have included a new $½-million office building, a $½ million warehouse, and the unique roll handling system by Lamson Corp. costing some $200,000. Pulp mill improvements include the addition of Improved Machinery Co. rotary screens, while Bird Centriscreens have been added ahead of the paper machines. A new laminating machine has also been installed.

Two Paper Machines

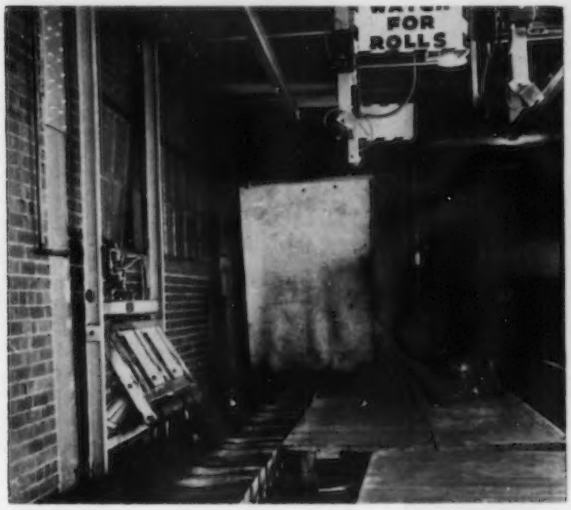
St. Joe has two fourdriniers, one 213 inches in width and the other 236 inches, producing kraft liner and nine point corrugating medium. The larger machine, No. 2, was installed



Recently installed banding machine of new design handles full output of mill's two machines.

Weighing station. Control console beside scale is used to select warehouse and unloading station for each roll.

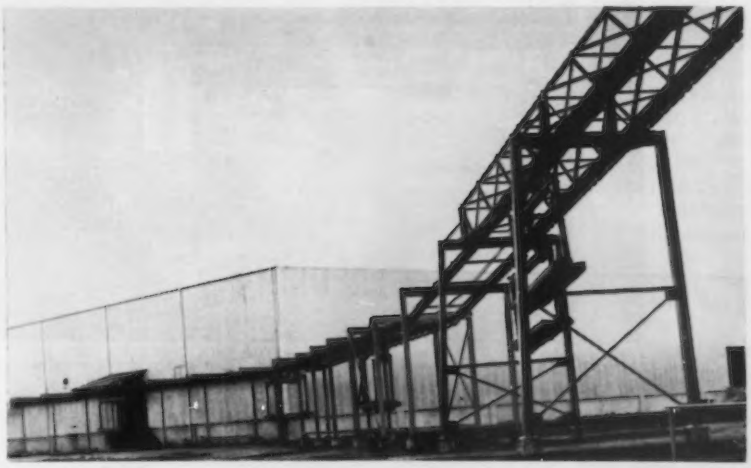
▼ Slat conveyor leads to No. 1 warehouse. If slated for No. 2, roll is moved by kicker at left to accumulator at right.



▲ Closeup shows empty trolley car. Partially hidden is transfer car which tilts roll onto trolley. At left is backstop.

in 1952 and was equipped with a new primary Beloit pressure headbox in 1954. In 1959, a new Beloit secondary headbox was installed replacing an older Valley secondary headbox which was installed on No. 1. This machine has 80 dryers with conventional hood, and is equipped at the dry end with an Accuray basis weight controller. This instrument is tied in with the stock valve; hence can regulate the amount of stock going to the fan pump and consequently the basis weight.

These two machines produce liner board and 9 point at the rate of 1200 tons per day. One of the problems at such high production rates is to move the wound rolls to finishing and storage as quickly as possible. St. Joe has a unique approach to this problem having developed, in cooperation with Lamson Corp., a new conveyor system to carry rolls from finishing to storage. Existing conveyors carry paper from the winders following each machine to the finishing operation where the rolls are stenciled, strapped and weighed. The strapping machine, handling the output of both paper machines, is a new design by Signode and will handle any roll diameter from 32 inches to 60 inches, and any length. It feeds steel strap around the rolls in about 10 seconds and completes the cycle of strapping one end in about 5 seconds. Following this operation, the roll is conveyed next to the weighing conveyor. After weighing, the rolls are sent to either the new No. 2 warehouse or to the older No. 1 warehouse. No. 1, with a capacity of 7500 tons, is used primarily for storage of paper destined for shipment by water to either American or foreign ports. However, it's the new conveyor system to No. 2 warehouse that is of primary interest.

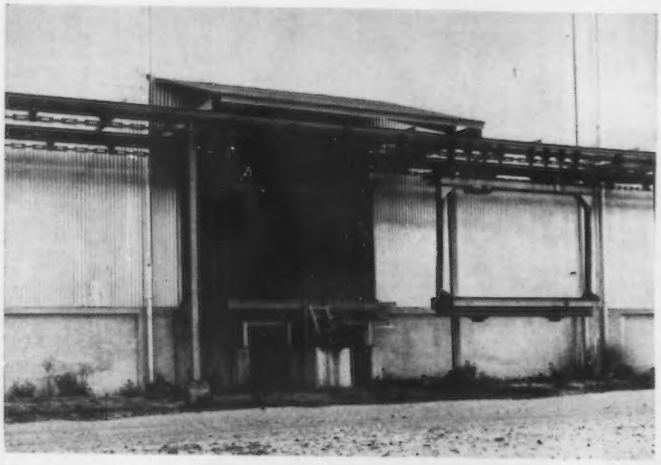


▲ Monorail forms continuous circuit on which trolley cars travel out to warehouse, unload at selected point, then circle back to loading station.

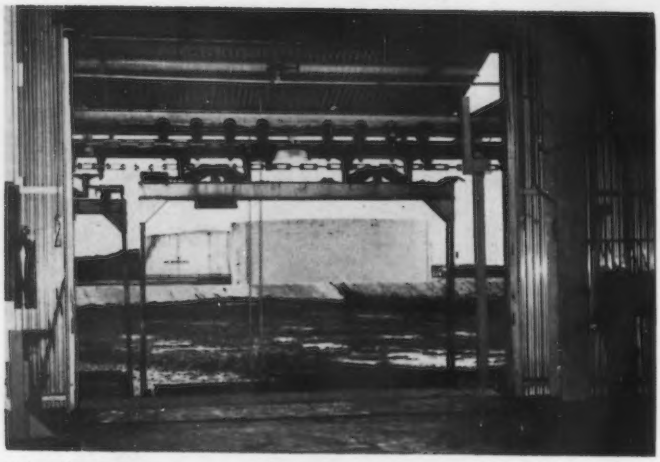
Monorail Conveyor

The new overhead monorail conveyor system carries the finished and steel strapped rolls from the end of the finishing line to the new warehouse nearly one quarter of a mile away. The system will handle the entire production of the company's two paper machines, some 1200 tons per day. It consists of an overhead monorail, from which 38 roll carrying cars are suspended, plus various automatic transfer and conveyor devices.

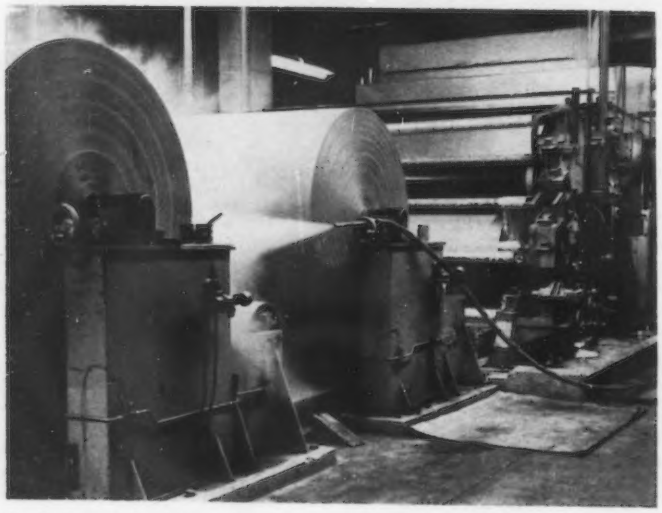
The monorail forms a continuous circuit on which the cars travel out to the warehouse, unload, then circle back to the finishing line for another roll of paper. The cars are equally spaced traveling about 45 f.p.m. and are continuously moving, even while loading or unloading. The cars are prevented from swinging when loading or unloading by a keel-like device on the car's bottom which rides between two steel rails located at each station. Motive power for the chain driven roll carrying cars is supplied by a 7½ h.p electric motor through



When in operation, trolley car at unloading station would be tilted by pneumatic device to roll paper into warehouse.



Unloading station from warehouse interior. Note chain drive mechanism on trolley car. In operation cars travel continuously at 45 f.p.m.



St. Joe's new laminator shown here with two rolls of 42 lb. board being combined into a 90 lb. sheet. It handles a 92 inch web.

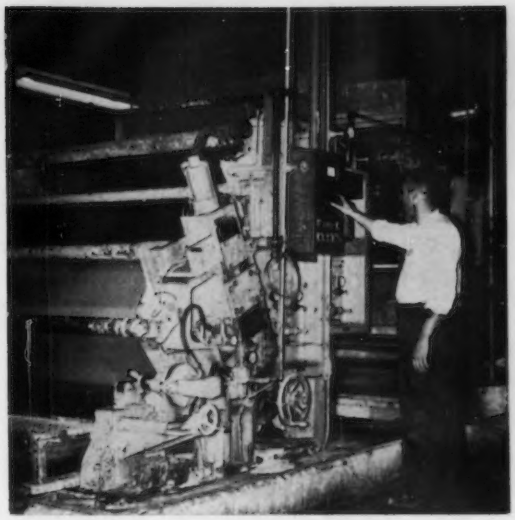
a single Caterpillar drive. The cars have convex carrying platforms, 30 inches wide by 112 inches long, which center the rolls and prevent them from rolling off. Each car will carry a roll, or any combination of rolls, up to a length of 98 inches. The maximum roll diameter carried is 60 inches, a limitation imposed because of limited clearance earlier in the finishing process.

Conveyor Operation

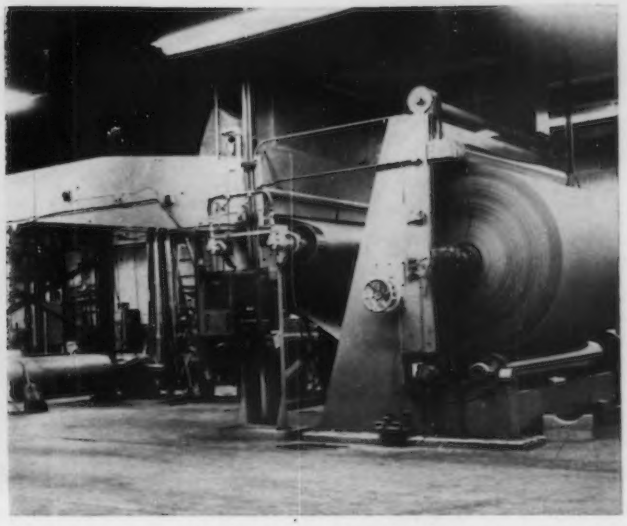
Operation of this new conveyor system begins when the scale clerk on the finishing line pushes a selector button on the control console which determines whether the paper roll is to go to No. 1 or No. 2 warehouse. If the roll is slated for No. 1, the existing warehouse, it continues on a slat conveyor in straight line flow to be handled by conventional methods. Most of the mill's production, however, goes to No. 2 warehouse, and so when the scale clerk pushes a button as the roll moves past the weighing station, he selects the conveyor system, the warehouse, and the unloading station. He is kept informed of the situation in the various storage areas of the warehouse by phone, and after the roll of paper passes this point it continues through the conveying system automatically without benefit of further human guidance.

The roll of paper, with its destination selected as No. 2 warehouse, is carried by the scale conveyor to a slatted conveyor which continues on toward No. 1 warehouse. After traveling a few feet on this conveyor, the roll is removed by a pneumatic kicker device, located beside the conveyor, which pushes the roll with sufficient force to move it across a platform to another conveyor. This is the accumulator conveyor, and the roll is positioned here by a pneumatically operated device which slows the roll of paper with a padded backstop and then eases it into position on the conveyor. As its name implies, the accumulator conveyor is utilized to hold two or three rolls of paper until ready to continue. The metal rollers of this conveyor are driven by a rubber belt which is held in contact with the underside of the rollers.

The accumulator conveyor starts and stops automatically as needed to move the paper rolls to a transfer car which serves as an automatic loading device for the trolley conveyor. This car is equipped with metal rollers to receive a roll of paper as the accumulator conveyor moves the roll ahead. The entire transfer car then moves on rails at a right angle to the direction of conveyor



Laminating and coating station. Machine is suitable for application of hot melt, foil, polyvinyl, etc.



The oven, of unusual shape, is a forced air countercurrent type followed by pair of cooling rolls and the reel.

flow and deposits the paper roll on a roll carrying car, or trolley conveyor car. This is done by an air cylinder which lifts the back of the transfer car tilting the roll onto the trolley car. Another pneumatically operated backstop catches the roll as it moves onto the carrying car and eases it into position. The action of the transfer car and the backstop must be in perfect synchronization with the trolley car as it travels past this loading station at 45 f.p.m.

To Unloading Station

The overhead monorail makes a 180 degree turn just after the loading point, reversing the trolley car's direction of travel so that it is moving toward No. 2 warehouse. The overhead monorail system carries the roll about two stories above the ground, over a smaller building, then gradually is reduced in elevation until the roll is being carried at the level of the warehouse floor. The monorail system continues at this elevation for six hundred feet along the full length of the warehouse. Five unloading stations are spaced along the side of the warehouse, and as the conveyor car moves past its pre-selected unloading station a pneumatically operated device tilts the car, rolling the paper off onto the warehouse floor. This action must also be synchronized, with the conveyor speed. The conveyor system continues to the end of the warehouse, then makes a 180 degree turn heading back toward the loading station, about one-quarter of a mile away.

This entire operation, from the moment the scale clerk pushes a button on a control panel beside his station, is automatic; no workman lifts or pushes a roll of paper, or even pushes another button. Electric eyes are placed strategically to control movement of the rolls. These are interlocked to prevent jamming of the paper rolls and incorporate many safety features. The conveying system was engineered and designed by Lamson Corp. in cooperation with St. Joe.

Back at the unloading station, a lift truck operator picks up the roll and carries it to the proper storage area. No. 2 warehouse, 180 feet wide by 600 feet long, is designed for 20,000 tons capacity and normally 95 per cent or more of the mill's 1200 tons daily production is handled through here. Rolls are moved within the warehouse by means of fork trucks and clamp trucks. The number of men in the shipping department varies considerably, but an average crew would be about eight men with the makeup being probably two shipping clerks, three lift truck operators and three men bracing and strapping the rolls of paper in the railroad cars. In charge of this operation is William Fleming, superintendent of finishing and shipping.

Laminator

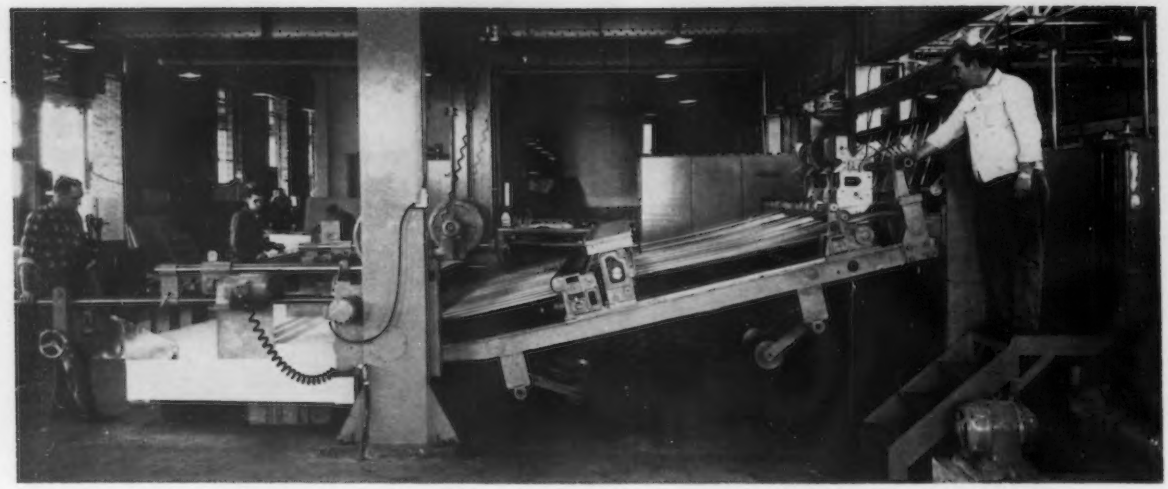
Another piece of equipment recently placed in operation by St. Joe Paper Co. is a new Inta-Roto laminating machine suitable for the application of hot melt, foil, polyvinyl, or printed matter to a web of paper. One of its primary uses is to laminate two 42 lb. sheets to make 90 lb., although it may be utilized for any grade of paper or board produced by St. Joe. It is expected to be used also in the production of both white and colored sheets. The paper and board manufactured here at the St. Joe mill is of unbleached kraft, so that by coating the board, a certain amount of upgrading can be accomplished. The finished material is used primarily in the company's own plants.

The laminator, 92 inches in width, consists of two unwind stands, a laminating station, a coating station, a totally enclosed oven, reel and winder. Length of the laminator from unwind stand to reel is 72 feet. Maximum speed is 900 f.p.m.

The laminating station includes a chrome applicator roll, coating pan, foil unwind stand, herringbone roll, and air loaded combining rolls. The coating station includes a gravure roll, rubber pick up roll and chrome plated roll. The oven, 36 feet in length, is a forced air countercurrent type circulating air at the rate of 4000 c.f.m. at 350°F.

Following the oven are two cooling rolls and then the Inta-Roto reel. Reels of paper are moved from here by electric hoist to the Beloit unwind stand and rewinder which operates at speeds up to 1500 f.p.m. The laminator's main drive is a 50 h.p. Reliance Vari-drive while the reel is driven by a 20 h.p. unit. Two 30 h.p. motors drive the rewinder.

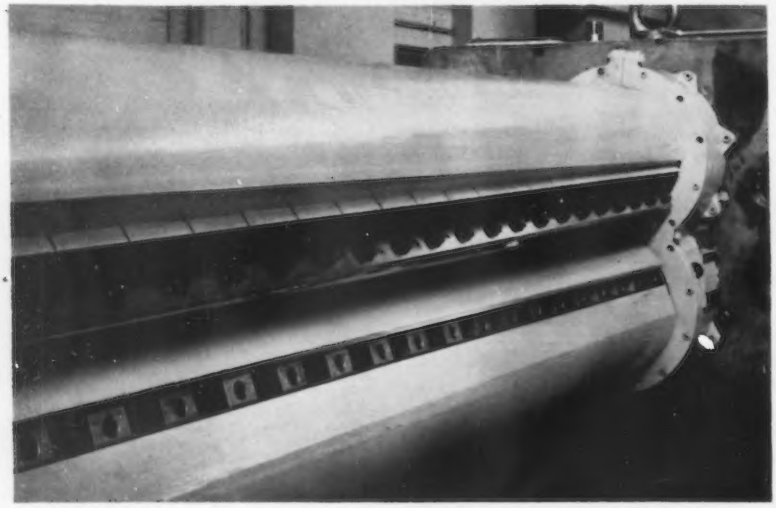
Coating and glue preparation is accomplished in three stainless steel mixing tanks with Lightnin agitators followed by four storage tanks providing a total storage capacity of 6000 g.p.m. Instrumentation and controls are by Mason Neilan and Foxboro. Another small holding tank is located beside the laminating station.



Overlapping delivery with mounting layboy. Cutter operator (left) adjusts layboy as a new pile is started.

West Virginia Installs Radically New Sheet Cutter at Covington

A new and different type of sheet cutter was recently placed in operation at Bleached Board Division of West Virginia Pulp and Paper Co., Covington, Va. This type of cutter is called Synchro-Fly by its manufacturers Jagenberg-Werke A. G., Duesseldorf, Germany. Its unique feature is that both knives are mounted on rotary cylinders which are so driven that the peripheral speed of the knives is synchronous with the speed of the web regardless of sheet length and speed of the machine. While Synchro-Fly paper and board cutters as well as pulp cutters have been in operation in Europe for a number of years, this is the first such installation in a North American mill.



Synchro-fly knives

Careful Planning

Westvaco's decision to purchase this cutter for Covington was preceded by very extensive preparations and planning. As early as December 1953, the company sent two men, Nicholas Shoumatoff and Ashby L. Rice, to Europe to investigate the Jagenberg cutters. Actual planning of the job at Covington began late in 1955. It was not, however, until March of 1960 that plans were completed and the Bleached Board Division installed the first Synchro-Fly cutter.

Backstands

The primary function of the new cutter at Covington is the sheeting of solid bleached kraft board, both coated and uncoated, from caliper .009 to .025. The cutter will also be used for sheeting of various grades of envelope papers produced at Covington. In view of this dual function the backstands are designed to accommodate either eight rolls of paper, 50 inches in diameter or three rolls of board, 72 inches in diameter. Two such sets of backstands are provided and mounted on a large motor-operated shuttle platform so that one set of rolls can be loaded while the other is being cut. The rolls are

Cutter operator, A. L. Taylor is at the control, while his helper, Virgil Harmon, Jr., adjusts the layboy.

Backstands on motor-operated traversing platform. Operator adjusts back roll as three rolls of board are being cut.

loaded by overhead crane. Each roll position is fitted with a large water-cooled band brake, equipped for pneumatic operation. Individual pressure gauges show the air pressure in the operating cylinders for each brake.

Characteristics of Cutters

The cutter is designed for a web width of 96 inches. A decurling device can be applied to straighten the web. The slitters, both top and bottom, are set to scale by rack and pinion. Bottom slitters are driven, but are mounted off the shaft for easy removal of slitter blades. A gear train in each slitter holder connects the blade with the drive shaft.

The pinch roll is fitted with felt patches, arranged in a diamond pattern. It is air-loaded and its nip pressure can be adjusted at each side.

Contrary to the practice on standard cutters, the web runs through the entire Synchro-fly cutter horizontally. The knives are spiral mounted on identical drums which vary in speed at each revolution so that they will be synchronous with that of the web at the time of cutting. Completely absent is the familiar clack-clack of conventional sheeters. The Synchro-fly emits only a slight "whoosh" as its knives cut through the web.

All drive elements on this cutter are enclosed in the side frames. They are under constant oil pump lubrication and can be observed through Plexi-glass windows.

A large hand wheel on the tending side of the frame serves to set sheet length while the cutter is in operation. This side mounts a scale with a pointer to show the sheet length setting while a second scale is used for checking synchronization values. In view of the synchronization of the knives there is no need to swivel the knife assembly to achieve a square cut. The knives are permanently angled in the machine.

The Covington cutter, which is the Jagenberg Model EQSM/Gl, will cut sheets from 16 to 95 inches long. Its top speed is 500 f.p.m. on sheets of 32 inches and longer. Cutting accuracy is 1/32 inch on sheets up to 40 inches and 0.1 per cent on sheets longer than 40 inches. The cut-off knives are designed to produce a clean cut on up to three webs of caliper .025 board.

Overlapper and Mounting Layboy

The sheets are carried through the machine by eight-inch-wide bottom belts. The speed of the machine belts can be varied by a PIV gear. The bottom belts of the overlapping delivery are individually tensioned, so that any single belt can be replaced.

The layboy is of the mounting type, and the overlapping delivery swivels as the pile mounts. The skids rest on the floor, while the entire delivery rises with the height of the pile. The rate of rise is variable and can be set at any desired speed. The mounting layboy can pile sheets up to 60" height on top of the skids. The finished piles can be removed either from the front or the sides of the layboy.

Electronic Counter and Marker

The cutter at Covington is equipped with a Jagenberg electronic counter and ream markers. An electronic scanner transmits electric impulses to the counting box, whenever a gap between two sheets passes by.

The box contains a counting mag net, which is set for the desired sheet count. Whenever the preset count has been reached an electric signal activates the ream markers. A special tape is then cut off and folded in each marker, so that the next upcoming sheet will carry it to the front of the pile where one end of the tape flips open. In this manner all piles are marked at the front, in plain view of the operator.

Electric Drive

The cutter is driven by a 40-h.p. Westinghouse AV drive, operating from a 440-volt, 3-phase, 25-cycle power supply. The d.c. motor has a base speed of 1750 r.p.m. with armature voltage control to 175 r.p.m. It is fitted with a tachometer generator and forced ventilated by a motor-mounted blower. Westinghouse supplied the operator's control desk and the starter-relay cabinet including the line starters for the auxiliary motors. Eleven auxiliary motors as well as the motors in the ream markers were supplied by Jagenberg.

West Virginia states that the Synchro-Fly knives have shown superior cutting ability with respect to both quality of cut and load capacity.

Within the limitations imposed by the slitters, the Covington mill has been able to make a considerable improvement in its sheeting operations by taking advantage of the new cutter.

How the Synchro-Fly Cutter Works

Thomas S. Greiner,
President,
American Paper and Pulp Co.

One of the forerunners of our present rotary sheet cutters was the Verny cutter. The Verny cutter had a permanently fixed bottom knife and a top blade, which moved up and down like the knife of a guillotine cutter. The web was pulled through the machine by grippers in an arrangement similar to that found in the duplex printing presses. At the instant of the cut the web was standing still, so that a straight and clean cut could be made.

Ever since modern sheet cutters have abandoned this principle in favor of a continuous run of the paper through the cutter, sheet cutter makers have been trying to imitate the superior cutting quality of the old Verny sheeter.

Conventional Sheet Cutting

Standard type paper cutters still use the stationary bed knife, but the top knife is mounted on a cylinder with a variable speed ratio versus the web. If short sheets are to be cut, the top knife will revolve faster than the web, for long sheets it will lag behind. Only when the sheet length equals the circumference of the circle described by the point of the knife, will the blade meet the web at its own speed. The bottom knife has, of course, always zero speed.

To achieve a proper cut by this system, the paper web must run through the machine at an angle as shown in Fig. 1. In order to increase knife capacity and to obtain a clean cut, the top knife is mounted at a slight helical. The cut will therefore begin at one edge of the web and travel across the web until it reaches the other edge. Since the web continues to move during the cut, the result would be a diagonal rather than a square cut. To offset this deviation the knife assemblies in conventional cutters are swivelled to varying degrees depending on the sheet length.

Cutting with Synchronized Knives

The principle of the synchro-fly cutter is shown by Fig. 2. Top and bottom knives are both mounted on cylinders with helical settings, so that the cut will again travel from one side of the web to the other. Both cylinders are driven in such a manner that the speed of the knives will be synchronous with the speed of the web at the duration of the cut. Since sheet lengths cover a wide range and are infinitely variable, the cylinders must accelerate and decelerate at each revolution. If the sheets to be cut are shorter than the periphery of the circle described by the knives, the cylinders must slow down before they meet the web and speed up after the cut. When cutting long sheets the process is reversed.

Since both knives now travel along with the web, it is no longer necessary to lead the paper through the cutter at an angle. Also since the knives have the same speed as the web during the cut, the assembly need not be swivelled to obtain square angle cutting at various sheet lengths. The knife assembly is set in the machine at a permanent angle.

Advantages of Synchronized Cutting

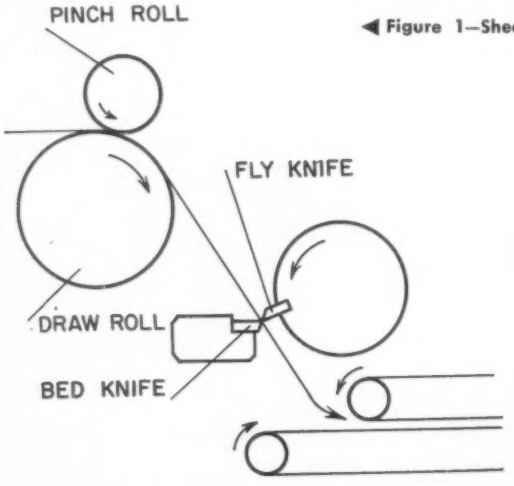
Sheet cutting in this manner has a number of advantages which can not be obtained by the conventional method. As both knives revolve at the speed of the web, the cutting capacity of the synchro-fly knife pair is considerably greater than that of a conventional cutter. This high cutting capacity can be reached even at low speeds while the conventional cutter requires a certain amount of momentum for the fly-knife to penetrate into tough and thick material. This feature is particularly important when a cutter is coupled with a laminator.

Due to its synchronization with the web, the knife of the synchro-fly cutter will act like a true pair of shears and cut through the material with unequaled cleanness. As the relative speed between the blades and the web is zero, there are no fibers torn off the web, consequently no fuzz on the edges. This cutter performs outstanding service whenever dust at the knife is a major problem.

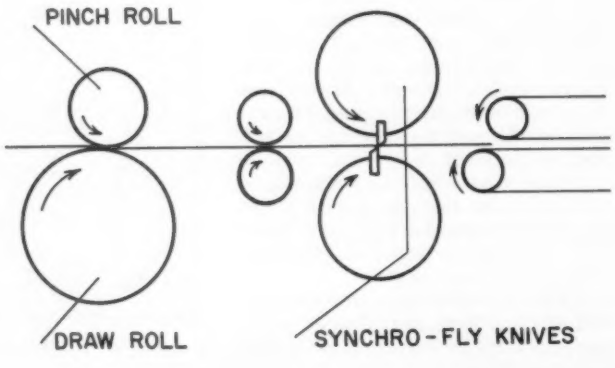
As there is considerably less strain on the knives of a synchro-fly cutter than on those of a conventional cutter, the time between regrinding is multiplied. This is a major factor in increasing operating efficiency of this equipment.

Although Jagenberg has built approximately 100 of these cutters, there are at present outside of Europe only four in use; one in Japan, one in Pakistan, one in Chile (a pulp cutter) and the latest installation in this country at West Virginia Pulp and Paper Co., Covington, Va.

◀ Figure 1—Sheet run through conventional cutter.



▼ Figure 2—Principle of the Synchro-Fly cutter.

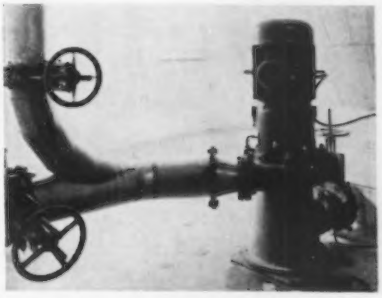


How Bure AB Stores Groundwood in "Agitator-Less" Towers

Although power-consuming agitators have been eliminated in their new design towers, this Swedish mill still equalizes variations in pulp quality by a unique method.

Bure AB's groundwood storage towers are each 42 feet high and 26 feet in diameter.

Hopper, and screw conveyor which revolves around the tower once every half hour.



500 g.p.m. pump extracts stock from tower; half goes to wet machines, half is recirculated to hopper.

Absence of power-consuming agitators in two new groundwood pulp storage towers has not prevented Sweden's Bure Aktiebolag from equalizing fluctuations in pulp quality in the towers. Equalization is assured mainly by the even spreading of incoming stock over the stock surface, and by recirculation of some stock from the bottom to the top of the tower.

In its drive for higher quality and more economical production, the Bure management decided to install ample surge capacity between the groundwood deckers and the Kamyr wet machines. The resulting installation was conceived, designed and built by the mill staff and has been in successful operation since September 1959. The installation consists of two concrete towers lined with glazed-tile, each 42 feet high and 86 feet in diameter, each with a storage capacity of 18,000 cubic feet (or 28 tons of pulp at five per cent consistency; 56 tons at 10 per cent consistency). Technically, a tower twice this size would be entirely feasible. Two towers were required because two definite qualities of groundwood are manufactured at Bure.

Bure AB is an export groundwood mill producing 120 tons daily of wet and dry groundwood on four grinders. The mill is located in northern Sweden in the town of Burea on the Gulf of Bothnia.

The towers were designed primarily to equalize fluctuations in pulp quality, as well as to provide surge capacity. Equalization by even-spreading of incoming stock over the stock surface is achieved by a screw conveyor which slowly pivots around the top of the tower. The stock is carried from a central hopper by the screw to a point about midway between the center and the tower wall. Thus incoming pulp is deposited in a circular "string" on the surface of the stock. It is claimed that if the areas outside and inside this "string" are equal, the incoming stock will spread out evenly over the whole of the surface. The screw conveyor makes two complete revolutions every hour around the circumference of the tower. This means that any fluctuations of quality with a duration shorter than 30 minutes will be practically eliminated.

Further equalization is obtained by re-circulating stock from the bottom of the tower back up to the hopper, where it is mixed with incoming stock from the deckers. In each of Bure's towers, a 500 g.p.m. capacity centrifugal pump suffices to withdraw stock from the tower at twice the incoming rate of flow. Half of this outflow is blended with the inflow at the hopper, the other half is pumped to the Kamyr machines' stock chest. Total installed horsepower per hour is 45.

The recirculated stock is carried from the pump at the bottom of the tower to the hopper at the top by way of a vented 24-inch vertical tile pipe running along side the tower. Tile pipe costs about half as much as stainless steel pipe of similar size; in addition it creates a more steady flow with less friction loss.

The bottom of the tower is a cone with a 90 degree angle at the tip, ending with a small circular pump well. At present, the Bure towers are operated at five percent consistency which allows the use of a relatively inexpensive centrifugal pump. It should be realized that this pump only has to produce a 10-foot head in order to maintain a proper rate of recirculation as long as the tower is filled. Of course, the capacity of the tower can be doubled by increasing the consistency to ten per cent, but this would call for a more expensive high consistency pump, and, as a rule, would also require a screw press to raise the consistency of the stock off the decker. As far as the performance of the tower is concerned, high consistency would present no problem.

If the tiles are set in the proper grout, the tower would be well suited to bleaching of groundwood, in which case the chemicals would be added at the hopper and mixed with the stock in the screw conveyor. The Swedish engineering firm of Aktiebolaget Celleco of Stockholm are licensed to build the towers.

New Developments in Paper Machine Headbox Design and Equipment

This comprehensive review and discussion of all the published information (1951-1960) dealing with this the most vital part of the paper machine was specially prepared for Paper Trade Journal. More than fifty illustrations are included.

H. A. Brewden and B. Locking

The scope of the article can best be outlined by referring to the justification there is for writing and presenting it at this time. The overriding importance of the headbox to successful operation may not be over-emphasized. A defective headbox causes the operators to use all kinds of stratagems to overcome the defects, though, in many cases, the fault is never traced back to the headbox as its true source. With the improvement of knowledge concerning paper machine headboxes and the reasons for successful high speed operation, in recent years, the truth of the above statement has been widely acknowledged. It is, therefore, very surprising that the original review of Mardon and Van der Meer (1), (2), (3), (4), which will be referred to later, was the first attempt to synthesize theory and practice and to bring a theoretical background to this part of papermaking.

From a critical reading of their paper it appears that Mardon and Van der Meer originally wrote their review in the year 1952, although it was not published until the beginning of 1954. The information presented in this article dates from 1951. The subsequent editions of the review, especially (4), published in German, did correct several mistakes in the original, and broaden the basis of the material presented, but did not bring the subject matter any more up to date. Van der Meer (5) gave a related paper on the hydraulics of flow box and slice in which his own experimental work was presented. It therefore appeared that the publication of an up-to-date review in this field, dating from 1951, where Mardon and Van der Meer left off would be to the general interest of the industry.

It seems advisable to discuss these publications of the two authors before proceeding further. Their review was deficient in many respects, notably in that the material presented was partial in character, in particular in that the distribution or manifold problem was not dealt with. The hydrodynamics, as presented, were crude in character and sometimes confusing to the reader, leaving him with the suspicion that the authors may have only partially understood themselves the application and meaning of some of the points raised. Some of the headboxes they chose to illustrate the design points were from the patent literature and through thus valuable as showing the trends of ideas, were not of use in showing the experience in practice.

With all these limitations, however, it is only just to state that the paper, with all its faults, represents the basis on which many later contributions seem built. Some of their suggestions for further work have been followed up and resulted in an increase in knowledge of considerable importance.

From the time of publication of this first paper (1) the literature that exists on our subject, consists of the published patents and a fairly large number of published papers. These can best be examined using the division of reference (6) which paper is largely quoted at the beginning of the next section.

Three Related Problems

In their paper on headbox piping (7), Mardon, Wahlstrom and O'Blenes showed the importance of satisfactory wet end piping to headbox design and partially placed this on a quantitative basis. If one adds these observations to those in (6), the problems in the headbox design field may be satisfactorily defined as firstly the obtaining of such a stable flow in the approach piping that disturbances which spread through to the headbox are not caused, and secondly the satisfactory spreading out of the flow from a large pipe to the slice so that an even dispersion and flow on to the wire is obtained. In reference (6) this latter was subdivided into three related problems in fluid mechanics:

1. The Manifold problem—spreading of the flow from a single large pipe to the full width of the headbox.

2. The Flow problem—control of the flow in the box so that eddies causing cross currents and flocculation are avoided and control is maintained.

3. The Slice problem—delivery of the final jet to give an even floc free sheet.

The above are applicable equally to headboxes of high speed and low speed machines. However, almost all the development work has been carried out for machines in the higher speed ranges, where good headboxes, as pointed out above, are essential and has then, in the case of technically advanced slow-

ABOUT THIS ARTICLE

The importance of the headbox to successful high speed operation can hardly be over emphasized. (Although it is not often stated, the headbox should be equally important in low speed operation.) Paper Trade Journal is therefore very pleased to publish this significant work. It is noteworthy that the large bulk of published research work in this field in this period has been carried out by three schools of workers, two in North America and one in Europe. In this country the group working at Kimberley Clark Corp., headed by C. A. Lee (now general manager of Formex Co.), with H. Nelson Calamb and H. W. Bennett were outstanding. On the same level is the Canadian (Anglo Paper Products Co.) group originally started by Gunnar Gavelin (now chief engineer, Central Laboratory of the Swedish Paper Mills) and Jasper Mardon (now with Oxford Paper Co.) and continued by Mardon with Borje Wahlstrom (now research director Karlstad Mechaniska Werkstad) and George O'Blenes (now working in England.) The third group of workers is that at J. M. Voith headed by Drs. Mueller-Rid and Pausch. The assessors of the review for Paper Trade Journal considered that the German work had not received full justice in the review and the editor has arranged for these workers to write a supplementary contribution.

speed mills, been transferred to headboxes of low speed machines. It thus forms a convenient, if arbitrary, distinction to consider separately headboxes for high and low speed machines.

In the ensuing discussion, it must be remembered that material adequately dealt with in reference (4) is not repeated.

HIGH SPEED HEADBOXES

Approach Flow System

By this term is meant the piping to the distribution system of the headbox from white water supply (wire pit and white water tank) and from the stock pump including piping and positioning of machine screen.

This problem has received considerable attention in the industry since the publication of reference (7). In addition to this paper, however, only one other paper on this subject (8), by Reitzel, and a pre-existing patent (9) are known.

Mardon et al (7) point out that the occurrence of pulsations in the approach piping of paper machine headboxes was far more widespread than generally realized, and that these pulsations, which could affect open and air-cushioned boxes as well as closed boxes without air cushion, show on the wire as length direction variations in basis weight. They consider the disturbances as divisible into mass flow surges and elastic pressure waves, the former arising where there is some discontinuity, however partial, in the liquid system. They point out that such discontinuities can occur, for example, when either air separates out as a distinct phase or cavitation occur, the flow separating and later again forming a continuous system. Elastic pressure waves can be set up in paper machine approach flow systems by various sources. These are pressure waves similar to sound waves in air or water, or to elastic pressure waves in solids.

The mass flow surges were shown to be highly dependent on the amount of air present and to the geometry of the piping: the biggest single cause was the restriction at flow control valves when pumps of too high a head were used. Both in their work and that of Reitzel, the elastic pressure waves were traced to pulsations from screens in synchronization.

In references (7), (8), remedial measures that can be taken to reduce the disturbance level were quoted as:

1. Reduction of the disturbance cause by proper wire pit and piping designed as described in reference (9), and the addition of suitable air vents at piping high points or dead ends. The reduction of excessive head developed by fan pumps is also considered as essential. If a by-pass is used to reduce fan pump head, it must be designed with extreme care, or must discharge to a free surface. In designing piping systems mass flow surges can be reduced by the use of Y's avoidance of T joints and use of long radius and mitre bends.

In the case of elastic waves, both workers reduced the disturbance level from elastic pressure waves by desynchronizing the screens which were the cause, Reitzel by mechanical desynchronization and Mardon by multiplying the number of rotors in the screen following an earlier resolution of the same problem by Klemm (10). A further reduction was obtained by Mardon with the use of a combination of screens with an odd number and screens with an even number of blades on the rotors (11).

One method of flow control developed by the same worker is to use a gate valve avoiding the mass flow surges that this would normally create by irrigating the downstream side of the valve with suitable perforations in the valve plate.

From what has been said earlier, it will be realized that the discovery of a method of controlling flow satisfactorily by means of a gate valve is of great importance to paper machine system designers.

2. Suppression of Surges — The three methods that have been used as aids in the suppression of surges are the installation of perforated plates in the flow system, the use of flexible couplings in the piping and the installation of surge tanks. A satisfactory surge tank installation in the case of the authors (7) quoted gave a reduction in disturbance level of 70 per cent. The theory of surge tanks is as yet only partially developed; the contribution of Baines (11) gives design criteria for the construction of tanks for the suppression of mass flow surges but no treatment has appeared as yet for tanks to suppress elastic pressure waves.

It is not the purpose of this review to repeat all the material in the papers considered, and the reader should refer to (7), (8) for full details.

Manifold Systems

By "manifold systems" we mean the spreading of the flow from one large pipe to the full machine width. This was the weakest section of the paper of Mardon and Van der Meer, and can stand considerable expansion here. The reason for this state of affairs is interesting: it appears to have been due to the lack of adequate systems of measurement in headboxes to properly characterize them and thus trace the faults to their source. This resulted in an acceptance of certain of the then existing manifold systems by these authors which the

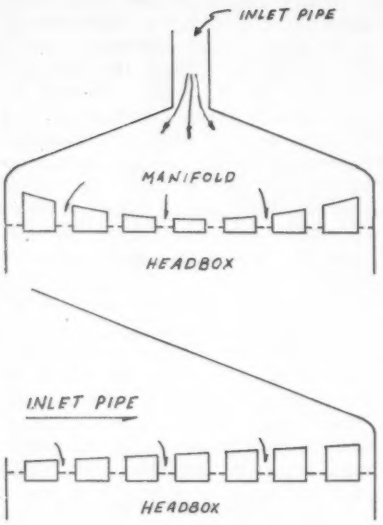


Figure 1A (Above): True manifold system used for certain kinds of closed boxes with central inlet. (Symmetrical) Figure 1B (Below): True manifold system used for certain kinds of closed boxes—side inlet. (One Sided)

subsequent writings and experiments of Mardon, Wahlstrom and Nelson have shown to be unjustified.

Figure 1A shows a "true manifold" as used today to feed certain types of completely closed headbox with air cushion and many open boxes. The disadvantages of the one-sided design, as shown in Figure 1B have been summarized (13), where it was pointed out that it is extremely difficult to obtain an even pressure distribution by such a design and that a very high pressure built up at the dead end of the manifold. With the large pipes leading from the manifold to the box in normal cases there is also a very pronounced cross directional flow in the box.

The designs shown in Figure 1A and 2 suffer because there are high pressure points opposite each of the pipes, and these can persist as pointed out in (13) right through to the slice. Figure 3 taken from this paper shows how experimental measurement can pick up these high pressure points in the slice. Excessive slice adjustment is necessary to compensate for these and this results in crossing waves on the wire with the possibility of formation of light spots.

Figure 4 shows an example of a more modern type of manifold as used at the present time on air loaded headboxes, and Figures 5A and 5D shows the "explosion chamber" type manifold used on all types of boxes but gradually falling out of favor among designers. The idea of these systems is that there are many inlets to the box from the large cross pipe which may either be fed by two machine direction pipes similar to Figure 2 or occasionally is fed from both ends. The flow is supposed to be spread equally by the connecting pipes from the cross pipe, any irregularities in the second case being removed as the stock whirls round in the "explosion chamber" before it enters the headbox proper through the machine width slit, which, causing intense turbulence is also supposed to even out the pressure distribution.

In Figure 4, the general theory is similar but in the most modern cases the slit can be adjusted for different flow rates and, in some special cases, can be adjusted across the machine.

In actual fact, in all the above

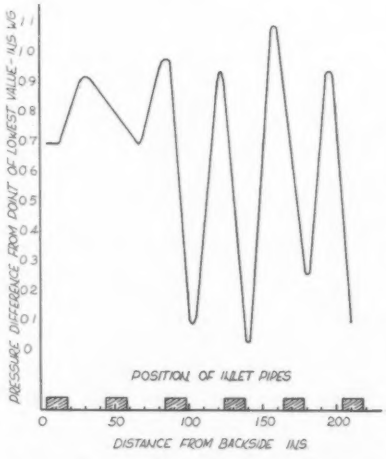


Figure 3: Distribution of mean pressure in slice across headbox showing persistence of high pressure points from true manifold.

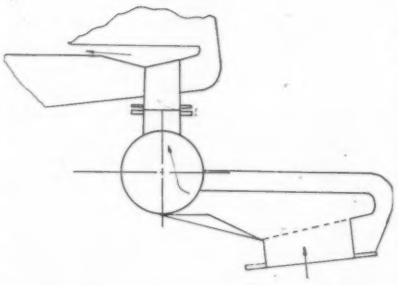


Figure 4: Typical manifold for air loaded box.

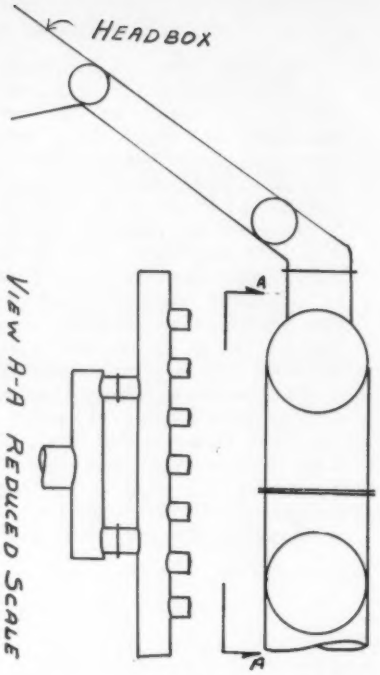


Figure 2: Typical manifold for an open box.

designs, very severe inequities of pressure distribution can occur due to the formation of strong vortices which progress through the box. These are unstable and move laterally if they are not removed by flow rectifying devices, they give shifting heavy bands on the wire. The prevention of such vortices reaching the slice is frequently very difficult.

Figure 6 shows the modern form of the cross flow distributor as has been extensively used for the last eight or ten years. Figure 7, taken from reference (8) shows a typical piping system for such a system. Cross flow distributors of this principle were originally patented by S. A. Staege (15) and later by L. Hornbostel (16).

The theory or idea behind this construction is that an equal amount flows in from either side and that the cross flows from each component cancel each other out. Additionally, a cross connection is provided from the small end of each to the big end, with the idea of preventing a dead end. In actual practice, the circulation occurs in the reverse direction to that intended by the designer, and there is flow from the large end of each of the two compartments in the small end of the other. This causes a high pressure point about ten per cent of

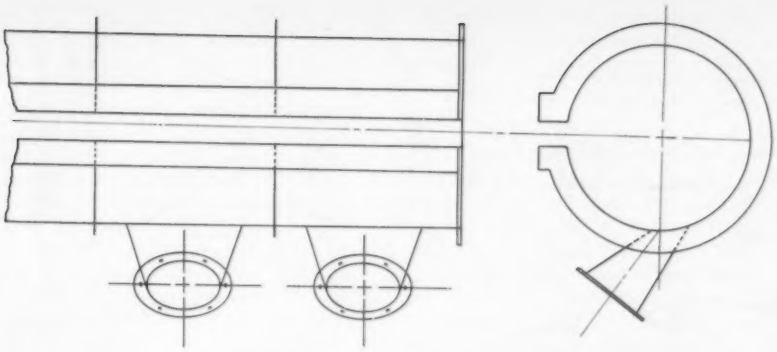


Figure 5A: Explosion chamber type manifold having angular impingement by small diffusers.

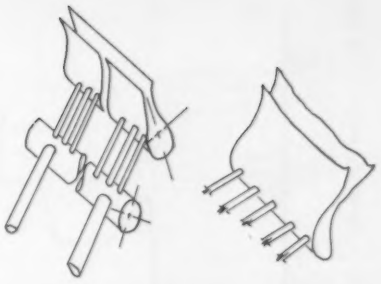


Figure 5B: Explosion chamber type manifold having angular impingement then multiplicity of smaller pipes into headbox.

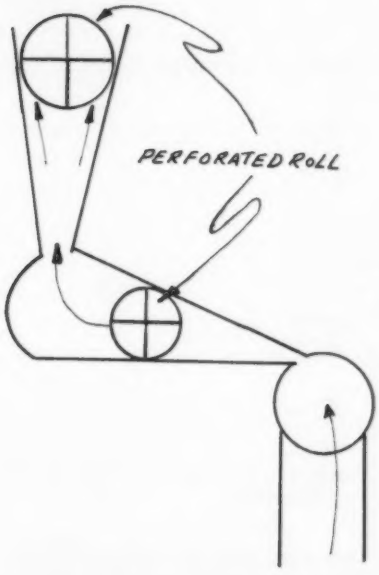


Figure 5C: Explosion chamber type manifold with direct impingement to chamber and horizontal tangential take off.

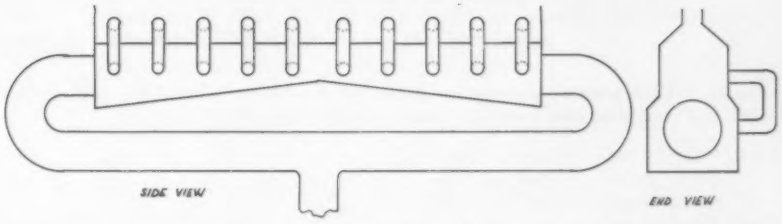


Figure 5D: Explosion chamber type manifold type with direct horizontal entry to chamber and vertical outlet.

the total width from either end. In addition, there is another high pressure point in the middle of the box. Exact location of these three high pressure points depends on the configuration of the piping before the division of the flow into two parts. If there is anything "one-sided" in the piping system, then one side of the box will be at a higher pressure since one of the flow divisions takes more stock.

Under normal circumstances, these high pressure points do not show too adversely, provided the liquid level in the box is high enough and flow obstructions such as perforated rolls are provided. Normally the air loaded rectangular boxes, to which reference will be made in the next section, contain at least five such rolls.

If, however, it is necessary to run these boxes at a lower level to get sufficient flow rate through the box, or at lower machine speeds deleterious effects of the cross flow (1200 f.p.m. and less), then the distribution system show up very severely and affect the machine operation.

Experimental measurements by Mardon and Wahlstrom (17) are in agreement with the general statements made above. Figure 8 reproduced from their paper illustrates the pressure in the slice across the width of a machine at normal and at low levels in the headbox; Figure 9 also from the same reference illustrates the variation of flow rate at different depths, in both cases for a conventional five roll rectangular box similar to that of Figure 14 and fitted with the conventional cross flow

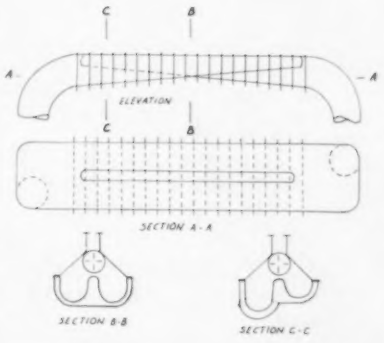


Figure 6: Modern form of cross flow distributor.

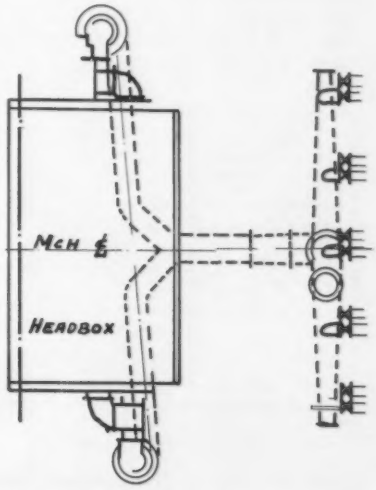


Figure 7: Typical piping system for cross flow distributor.

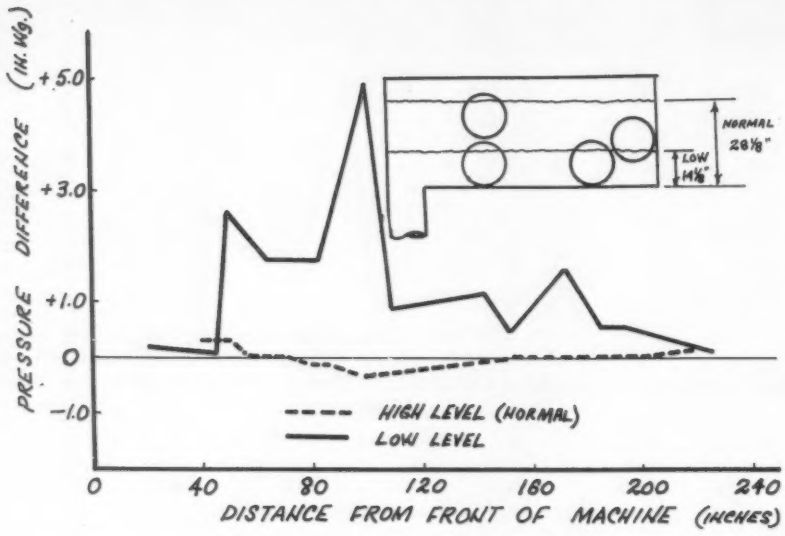


Figure 8: Slice pressure distribution across rectangular air loaded box with vertical slice and cross flow distributor, at normal and low levels in the box.

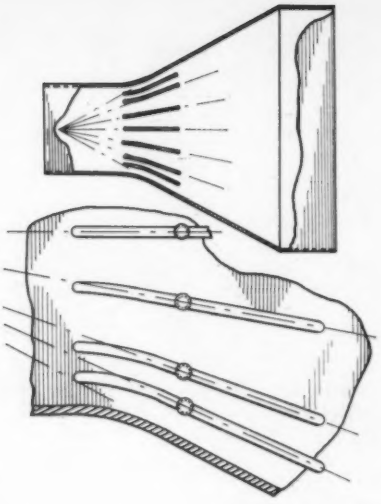


Figure 11: Distribution system of C. A. Lee.

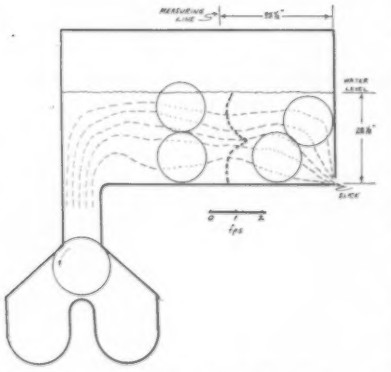


Figure 9: Variation in flow rates at different depths with cross flow distribution system.

distributor similar to that of Figure 6.

Nelson (18) an associate of C. A. Lee has described flow meter measurements at different depths across the width of a similar box prior to the first stack of rolls, but with the recirculation from the end of each of the two halves of the cross flow distributor, apparently not feeding to the other half.

Figure 10 from Nelson's paper shows the relative velocities across the box at 0.2 and 0.8 of the total depth. These results showing a very uneven velocity distribution were typical of all data obtained on the particular machine including measurements made with changes in the amount of recirculation. Nelson stated that it was quite apparent that the defects and the range of velocity distribution were strongly influenced by inherent spreader characteristics.

For a box of the rectangular air loaded pattern, fitted with cross flow distributor running with three rolls and the stock level on the top of the rolls Nelson's flow meter measurements confirm the very poor flow pattern obtained.

The cross flow distributor has been mathematically analyzed by

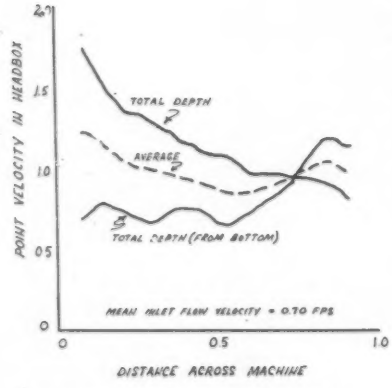


Figure 10: Velocity in rectangular type air loaded headbox across box after cross flow distributor at two different depths.

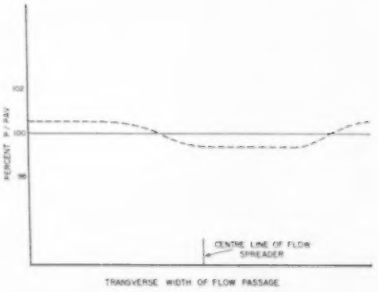


Figure 12: Pressure distribution for Lee type distributor.

Steenberg and Pettersson (14). Their analysis should be consulted by anyone wishing to go further into this matter than the above discussion; it should be noted, however, that the special case of the equations used do not apply to the case with recirculation, though the general case would apply.

At the same time that Mardon and Van der Meer wrote their paper (1) to (4), they concluded that the cross flow distributor was satisfactory and ignored all other types of manifold system. We have seen that the cross flow distributor is not satisfactory at low flow rates or unless generous flow impedances

Figure 13: Principle of taper flow manifold.

are placed in the box. The other types of manifold systems were briefly discussed.

Since 1951, however, two completely new types of flow distribution or manifold systems have appeared in the industry and it appears almost certain that variations of these two will have wide acceptance in the future. The first of these new designs is due to C. A. Lee. The contributions to this field of Lee and his associates are considered by the present authors to be very significant.

Lee's original design (19) is shown in Figure 11. It can be seen to consist of a rapid expansion from a pipe in the machine direction to the width of the machine, the expansion in width being accompanied by a decrease in thickness. The vanes shown were to spread the pressure evenly across the width.

Adjustment is made until hydraulic measurement at the slice, and sometimes in the box, shows that the volumetric flow rate is even across the box; the vanes are then locked in this position.

In the original version of Lee's flow spreader the vanes were the same shape and adjustable. In the later versions the vanes are still adjustable but have a warped section with curved profile. In certain special cases the vanes were made stationary and non adjustable.

Figure 12 shows a pressure distribution diagram and is reproduced from Lee's patent. These manifold systems are known to be in use on machines making a very wide range of paper and at wide speed ranges, and to be giving most satisfactory service.

Nelson (18) gives details of the velocity distribution across the width of a box fitted with this type of distributor. Figure 45 illustrates diagrammatically the type of box and illustrates the extremely good flow properties and distribution obtainable with the Lee type distribution system.

A comparison of the results presented in this combination (18) for the three roll box with the Lee type spreader and with the conventional cross flow distributor shows nearly perfect distribution for the former and the previously noted poor distribution for the latter.

A patent of Hornbostel (20) appears to present a modification of Lee, inserting a distributor roll to keep the guide vanes clean.

The second of these new manifold systems is due to Mardon who developed this while working with Gavelin and described the principle in (12). This system, that of the "one-sided inlet" is shown in Figures 13 and 14.

In this system, the stock is introduced along the manifold at one end and flows at a uniform rate on which the principle depends by taking out, from the end of the manifold distant from the feed, a substantial percentage of the feed. This quantity is controlled by a valve, and the shape of the manifold, i.e. the rate of decrease in area, is calculated allowing for frictional loss, to maintain the even speed across the plate.

Under the circumstances outlined above, the holes turn the flow in the machine direction, provided that the correct ratio between hole diameter and thickness of plate is maintained. One of the advantages of this type of manifold is that it is independent of the total quantity fed provided only that the through flow at the outlet end is kept at the designed percentage of the feed.

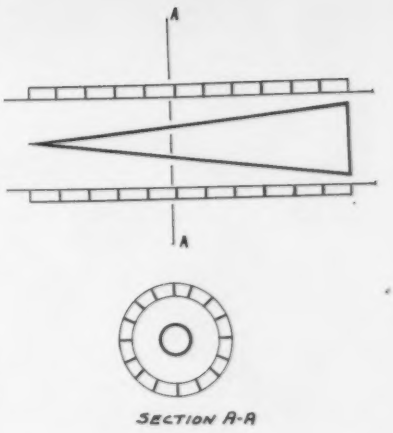


Figure 14: Variation of taper flow manifold.

In Figure 14, a variation of the principle is shown, whereby a hollow thick-walled roll is used with a tapered plug inside it.

In practice, with this design, it is said that it is extremely important to have the correct setting of the overflow valve or severe cross currents can occur due to angling of the jets from feed plate or roll. Moreover, it is understood that tapering of the holes enables the plate thickness to be reduced but that care must be exercised as too great a taper will give an over correction.

Figure 15 gives the adaption by Gavelin of the same principle to a small paper machine where the flow rates are comparatively low. (21) It will be seen that he has retained the tapered flow chamber and the overflow, but has replaced the perforated plate by a tube sheet con-

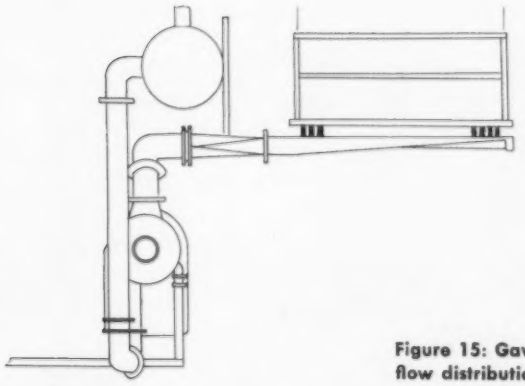


Figure 15: Gavelin's adaptation of taper flow distribution system.

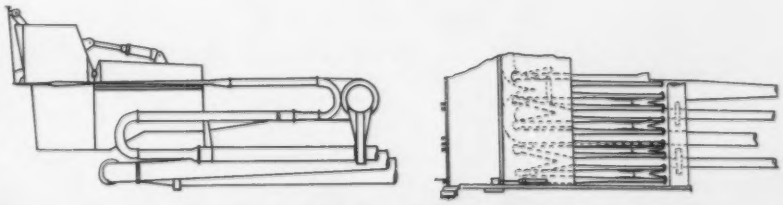


Figure 16: Specialized manifold of branching type.

taining small diameter tubes. This design has been found to be of the immediate greatest use on small machines, the improvement is flow having a marked effect on performance, though the principle can of course be applied to all machines.

The first description in print of this particular version of taper flow inlet is given by Robertson (22). In the case he described for a head box of approximately 150 inch slice width, 32 inch diameter pipes were used between the tapered header and the headbox proper together with a maximum recirculation of 20 per cent from the small end of the chamber.

Reitzel, (8), later developed a one-sided inlet to a headbox of the pump type, similar to that of Figure 1A in principle but with a different type of opening into the bottom of the headbox itself. From his paper, the distribution appears to have been satisfactory.

Having described the new developments that have been successful, it is instructive to consider a manifold system for a paper machine headbox that has been less fortunate. This construction is described in reference (23) and is illustrated in Fig. 13 taken from the patent. It will be seen that the construction is basically a succession of dividing pipes bent over on one another to avoid excessive space and with mitered bends. The headbox that follows the system for distribution shown in the same figure was of the pump type with a small total volume. The flow from this equipment was subject to snaking, that is the flow on the wire contained thick bands in the direction of the flow which were laterally unstable and wandering. The defect was of such a degree that it is understood satisfactory operation was impossible.

The flow characteristic was due to an asymmetric and unstable flow in the pipe system and to the flow characteristics at the joint of the spreaders where the flows of different origin are combined. This resulted in surging as the flow runs more up one side of the system than the other and then reverses the trend. An additional source of disturbance was the formation of persistent longitudinal vortices at the joints of the spreader.

In the case considered, the defects of the manifold system were covered by replacement of the pump box shown in the figure with an air loaded top containing a sufficient number of perforated rolls and a sufficient depth of flow to remove the high pressure wandering streams.

As far as we are aware, the above section has described the existing state of the introduction of stock to the paper machine headbox.

In the next section, we describe and discuss the headboxes that now exist and there are in any sense an advancement on this discussed in the previous review.

Headbox Design and Construction

Headboxes for high speed paper machines may be generally classified into one of the following types, open, air loaded and pump boxes. Low speed boxes are almost invariably of open construction, though occasionally the other two categories are encountered.

It was stated earlier that the flow problem in a headbox included controlling the flow and thus avoiding eddies and cross currents which cause flocculation and irregularities in basic weight. Mardon is known to hold that this can only be obtained under conditions where the flow is accelerating.

Lee (24) comments that secondary flow can only be avoided with very well designed flow passages and that under no condition can cross currents and eddies be avoided unless the flow passages are properly designed so that sharp discontinuities in flow do not exist. He points out that it is always easier to control the flow character in accelerating flow than in either a steady state or decelerating flow.

These considerations should be borne in mind in evaluating the designs which follow.

To Be Continued in the Next Issue

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THE Langston Leader
PAPER MILL EDITION
Leadership...by design
SAMUEL M. LANGSTON CO. • CAMDEN 4, N. J.
JULY, 1960 | *Published for the information of paper and board mills* | VOL. 2, NO. 5

WINDER VITAL FOR BUILDINGBOARD PAPERS

Beaver Wood Fibre Company Uses 2 New Langston Units To Make High Quality Rolls

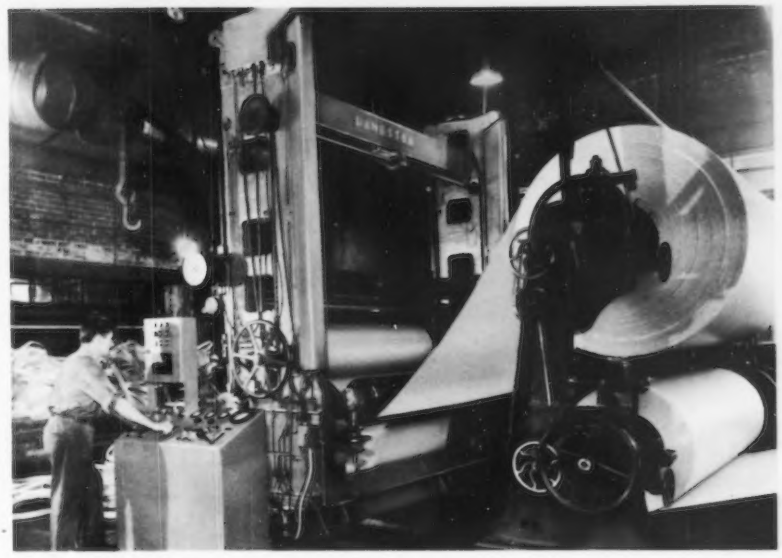
In the manufacture of paper for plasterboard and wallboard, the slitter and winder can make a valuable contribution to insuring customer satisfaction with the finished product.

On it depend tightness of the roll, its freedom from dust, accuracy of the slit edge and whether the roll presents to the customer an attractive appearance or not.

As one veteran paper maker put it: "It's no use making good paper or board if it isn't wound as a good package. The winder will make the difference in packaging the product."

• • •

With this, plant superintendent F. Harold Cowan of Beaver Wood Fibre Company, Ltd., of Thorold, Canada, is in agreement. And the winder that's making the difference at this mill is a Langston DA type—two new ones in fact, one behind each of the mill's 112-inch cylinder machines.



LANGSTON WINDER behind cylinder machine at Beaver Wood Fibre Company, Ltd., Thorold, Canada, is fed from two-roll reel spool.

Harold Cowan will tell you that more than appearance, though, is imparted to the rolls produced on the Langston winders. The dust free, shear cut slitters, for example, provide an important attribute.

In making plasterboard, the sheet must be dust free for a vital reason. The bottom sheet is covered with slurry, except the margin which is to be folded up over the top sheet. A stream of glue is sprayed on the edge and the fold must stick. Dust on the sheet hampers this adhesion and can result in faulty plasterboard.

• • •

On the other hand, in wallboard production, tightness of the roll is vital. A tightly wound roll can make a world of difference to the product that will come off the laminator or paster. Exact trim also is an increasingly important requirement as the speed of converting equipment becomes higher. The slit of the sheet edge must be highly accurate. Runout can act like a snag.

Says Cowan:

"The Langston winders are producing excellent quality rolls. The paper ranges in weight from 54 lbs. to 200 lbs., and the caliper from 55 point to 15 point. They're rewinding about 100 tons a day from each machine.

"Since the units started up in the last week of October last year, we've never lost a roll on the Langston winders. They've all been good tight rolls, free of dust. We've had no problem of offsets or annular rings. Credit

(*Continued on Page 2*)

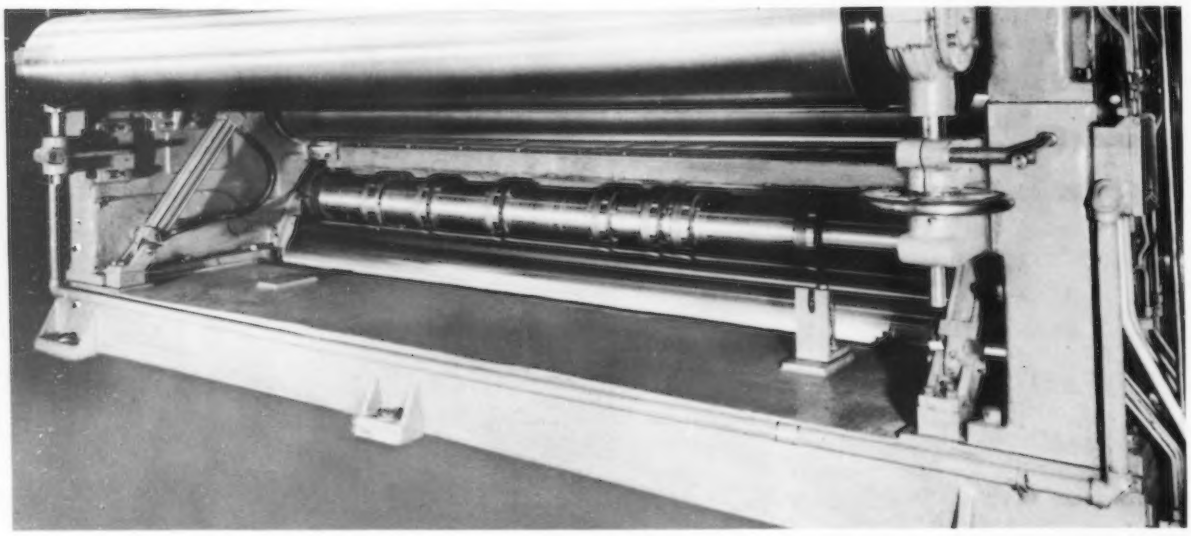
ROLL QUALITY is examined by Beaver Wood Fibre's plant superintendent F. Harold Cowan, right, and board mill superintendent C. O. Simpson. Company reports rolls from two new Langston Winders are tightly wound, dust free and of highly accurate edge cut.

COMPANY'S NAME FOR PRODUCT MAKES WEBSTER'S DICTIONARY

It's not often that a company's product finds its way into the Webster dictionary as beaverboard has for Beaver Wood Fibre Company, Ltd., of Thorold, Canada.

Here the famed buildingboard for walls and partitions first was made in 1913, then of virgin ground wood and now mainly of waste paper.

Another first for the company: in 1936, its paper machine made newsprint of southern pine.



SLITTER ASSEMBLIES on power driven shaft are a Langston patented type, guaranteed against any runout exceeding .001". Note hydraulic cylinder at far side of machine for automatic roll ejection, and heavy construction of bedplate.

Winder Vital

(Continued from preceding page)

for the latter belongs to Langston's new shear cut, slitter-head assembly."

• • •

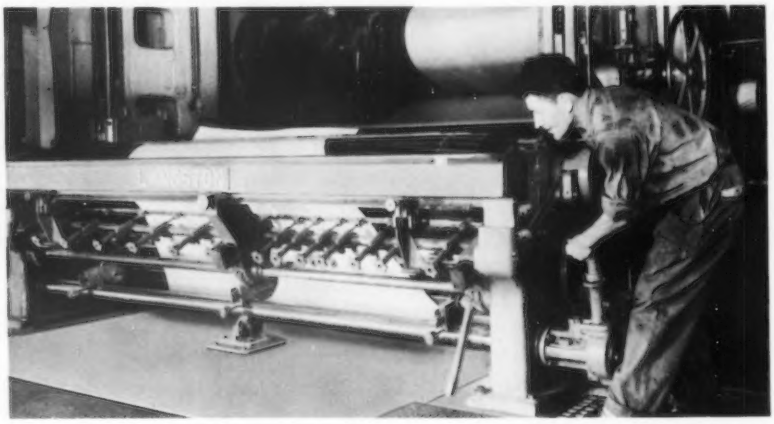
The winders are built to take rolls with diameters up to 78 inches, drawing directly from Beaver Wood Fibre's two-roll reel spools and utilizing the latter's manual constant tension control. Features of the winder include hydraulic roll ejection, and rider roll control for tighter roll starts and uniform density throughout the roll.

Beaver Wood Fibre produces annually about 52,000 tons of paperboard, 85 percent of which goes into boards for the building trades, the greater part into plasterboard and a lesser into wallboard. Boxboards of all grades comprise the remaining 15 percent of output.

• • •

A division of Bestwall Gypsum Company, Ardmore, Pa., Beaver Wood Fibre is part of an integrated operation from forest to finished material.

Its paper for plasterboard is partly consigned to other Bestwall mills, partly for sale on the open market. Wallboard is made at the Thorold mill, at a monthly rate of between three and four million square feet, for customers principally in Canada and Newfoundland and in the United States Midwest. Its boxboards go into such well known products as Kellogg's Corn Flakes, for example.



FRONT SLITTER is engaged by operator prior to starting up next rewind. Fixed angle of slitters eliminates blade chipping and wear due to improper setup. Langston shear cut slitter arrangement has proven best method yet devised to get clean cut, dust free rolls.

ALL CONTROLS are incorporated at single station console to make the work of the operator easier and more accurate.

Printed in U.S.A.

Prices of Fibers

MARKET WOOD PULP

THIRD QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
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Bleached Gw'd	$ 97.50/100.00	$97.50/100.00			
Kraft, Blchd.	‡152.00/160.00				§157.50/ —
Kraft, Blchd. Hdwd.	152.00/ —		140.00/ —		
Kraft, Semi-bleached.	140.00/145.00				
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	‡150.00/155.00	‡150.00/155.00	•155.00/ —	•155.00/ —	155.00/ —
Sulphite, Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd.	135.00/ —	135.00/ —	†135.00/ —	•135.00/ —	
Sulphite, Unb'l, Gl'sn		140.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

§ On Dock Atlantic Ports. • Freight allowed. † Varying Freight Allowances.
‡ Depending on Brightness.

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3	$7.50/7.00	$8.50/7.50	$7.50/7.00	8.50/8.00
4	7.00/6.25	7.25/6.25	6.50/6.25	7.75/ —
5	6.25/5.75	6.00/5.50	6.00/5.50	7.50/7.00
6	5.75/4.75	5.25/5.00	5.25/5.00	6.50/4.50
7	4.75/4.25	4.50/4.00	4.75/4.00	4.25/4.00

WASTE PAPER MARKET

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These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

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	July 25	July 25	July	July
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No. 1 News	12.00/ 13.00	12.00/ 13.00	13.00/ —	12.00/ —
Overissue News (Lg. size)	11.00/ 13.00	11.00/ 13.00	18.00/ —	18.00/ 19.00
Mill Wrappers	19.00/ 22.00	13.00/ 15.00	9.00/ —	12.00/ 14.00
Old Corrugated Containers	22.00/ 23.00	19.50/ 20.00	20.00/ —	23.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	30.00/ —	55.00/ —
New Double Kr. Ld. Corr. Cuts	32.50/ 35.00	35.00/ —	35.00/ —	35.00/ —
(Semi-chem. medium)	47.50/ —	47.50/ —	45.00/ —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	57.50/ —	— / —
New Br. Kraft, Env. Cuts	70.00/ 75.00	70.00/ 75.00	52.50/ —	60.00/ —
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Unprintd.	60.00/ 65.00	65.00/ 75.00	60.00/ —	60.00/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	25.00/ 30.00	17.00/ —	32.50/ 35.00
White Newsblanks	47.50/ 52.50	47.50/ 52.50	35.00/ —	55.00/ —
No. 1 Soft White Shvs.	60.00/ 65.00	57.50/ 60.00	60.00/ —	70.00/ 75.00
Super Soft White Shvs.	65.00/ 75.00	75.00/ 85.00	70.00/ —	— / —
Hd. White Shvs.	85.00/ 90.00	90.00/100.00	85.00/ —	85.00/ 95.00
Hd. White nv. Cuts	100.00/105.00	105.00/110.00	90.00/ —	110.00/113.00
Col. Tab. Cards	42.50/ 45.00	42.50/ 45.00	45.00/ —	40.00/ 45.00
Manila Tab. Cards	62.50/ 65.00	62.50/ 65.00	65.00/ —	70.00/ —
No. 1 Col. Ledger	35.00/ 40.00	35.00/ 40.00	40.00/ —	27.00/ 29.50
White Ledger	48.50/ 52.50	50.00/ 55.00	50.00/ —	50.00/ 55.00
Mixed Book & Mag.†	— / —	— / —	12.50/ —	— / —
No. 1 Books‡	16.50/ 19.00	14.50/ 16.50	27.50/ —	13.50/ 14.00

† Includes Time & Life: no coarse groundwood. ‡ Not to exceed 10% of groundwood.

Meet Huyck's
McClure

William C. McClure, a graduate Industrial Engineer from Lafayette College, is Field Assistant to Huyck's Sales Manager. Bill joined Huyck in 1951 and has several years' experience as a Field Service Engineer. It was his suggestion to establish the Huyck Felt Workshop Program to provide better communication between papermakers and feltmakers. Bill continues to work closely with papermakers to bring them the latest advancements in felt application and provides close liaison between our Field Staff and Felt Manufacture and Design.

HUYCK FELTS

First in Quality . . . First in Service Since 1870

ADVERTISEMENT

Spacemastre®

by

18 28 THE SMITH & WINCHESTER MFG. CO.

THE ELECTRONIC BACKGAUGE CONTROL

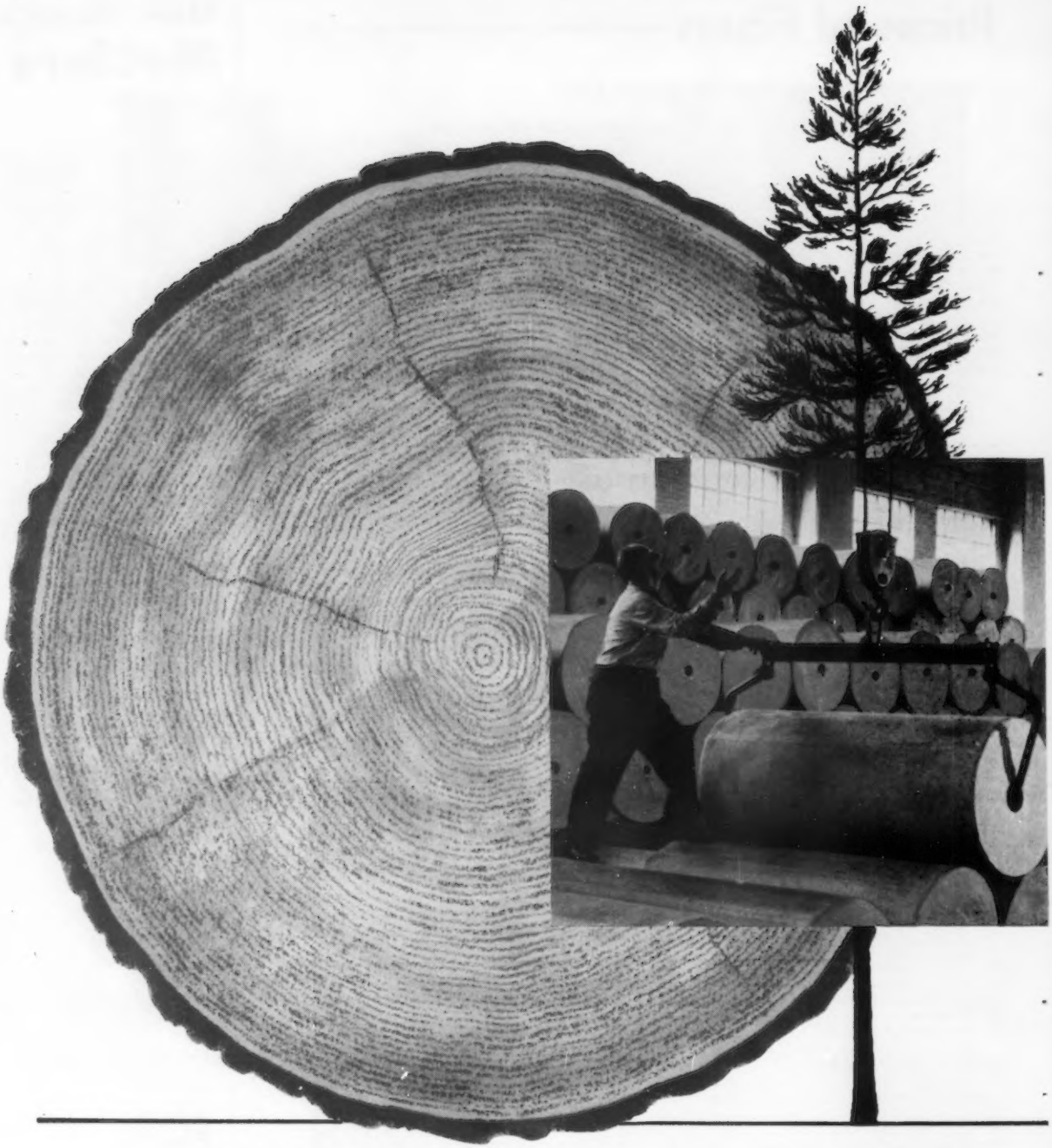
FOR TRIMMERS

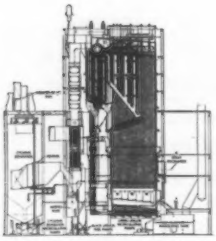
INCREASES PRODUCTION AND ACCURACY

CONTACT

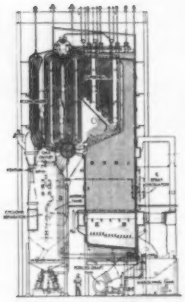
SMITH & WINCHESTER
SOUTH WINDHAM, CONN.

SPECIALISTS IN SHEETING & CUTTING EQUIPMENT

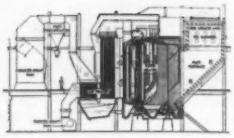




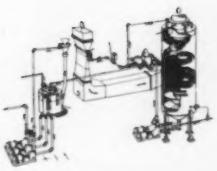
Kraft Recovery Boiler



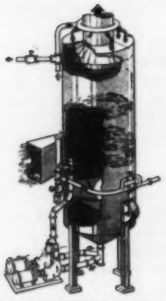
Neutral Sulfite
Recovery Boiler



Magnesium Bisulfite
Recovery Boiler



Venturi
Evaporator-Scrubber



Cyclone Evaporator

PROCESS

BABCOCK & WILCOX EQUIPMENT FOR THE PULP AND PAPER INDUSTRY

FOR CHEMICAL RECOVERY · PROCESS STEAM · POWER

Through constant research and engineering, B&W offers pulp and paper manufacturers equipment and systems adopting the latest operating practices and production advancements.

Recovery units for the Kraft process are now operating at higher pressures and temperatures to more economically meet the pulp and paper mills' expanding electric power requirements.

MgO recovery* is opening new areas of economical sulfite pulp production with recovery of both heat and chemical values from magnesium bisulfite waste liquors.

The recently introduced Magnefite pulping process* permits use of a wide variety of wood species and offers lower mill first-costs, and lower pulp production costs.

Power boilers operate at a wide range of steam pressures and temperatures for improved performance in generation of electricity, and for process steam.

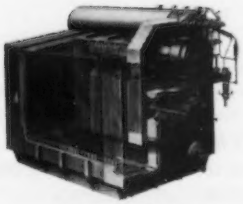
These are some of the more recent developments in the complete range of B&W equipment and processes that are the result of B&W's close relationship with the industry and its needs. Call in the B&W man at your next stage of mill development planning. He'll talk B&W equipment in your language. The Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

**Exclusively available from The Babcock & Wilcox Company.*

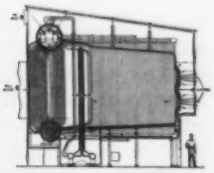
P-832

B&W THE BABCOCK & WILCOX COMPANY

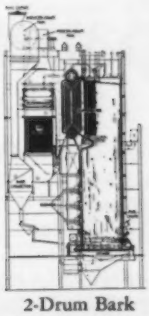
BOILER DIVISION



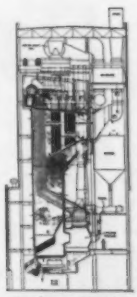
Type FM Package Power Boiler



PFI 400,000 lb hr Power Boiler

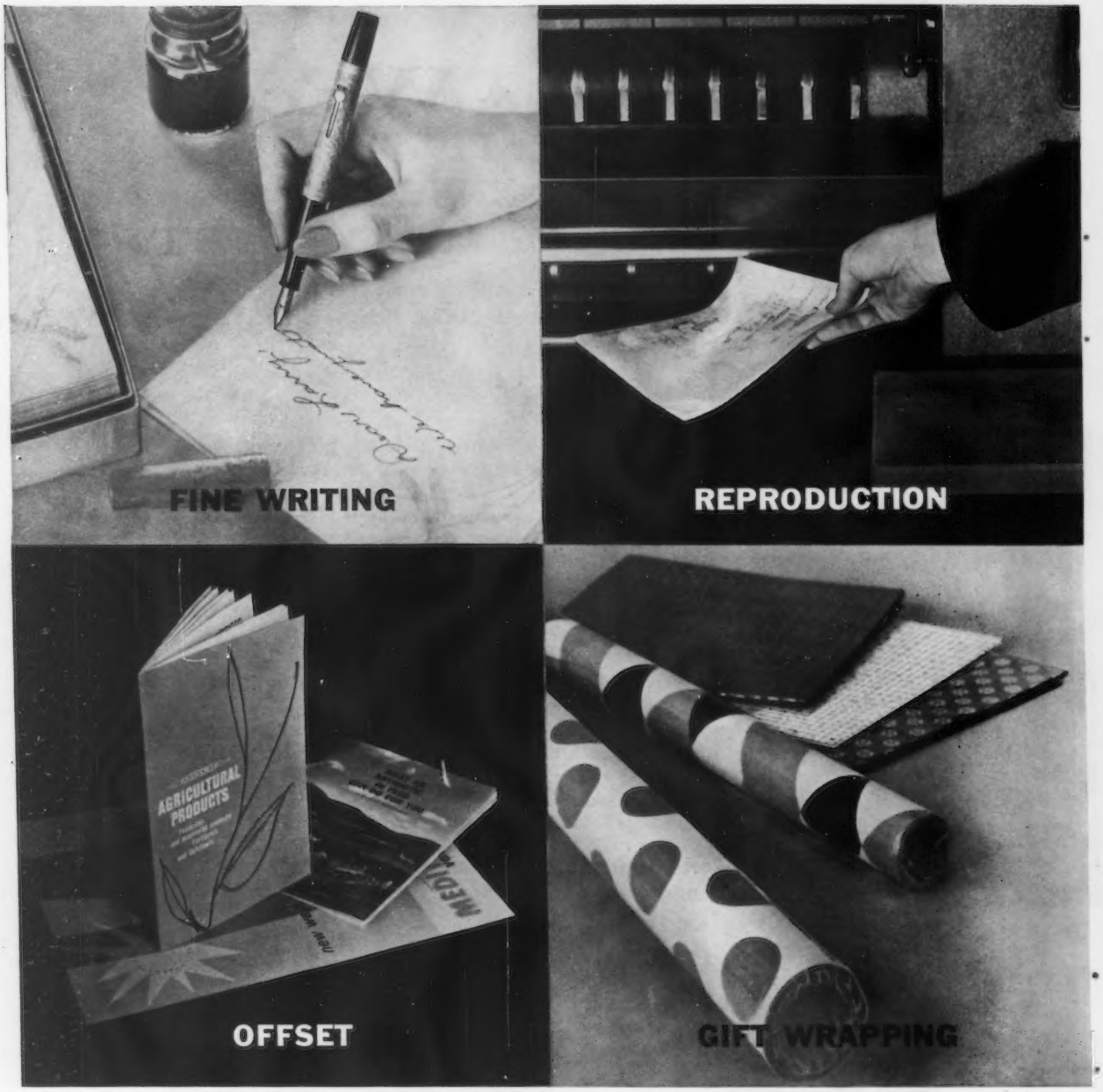


2-Drum Bark Burning Boiler



Radiant Boiler with Cyclone Furnace

POWER

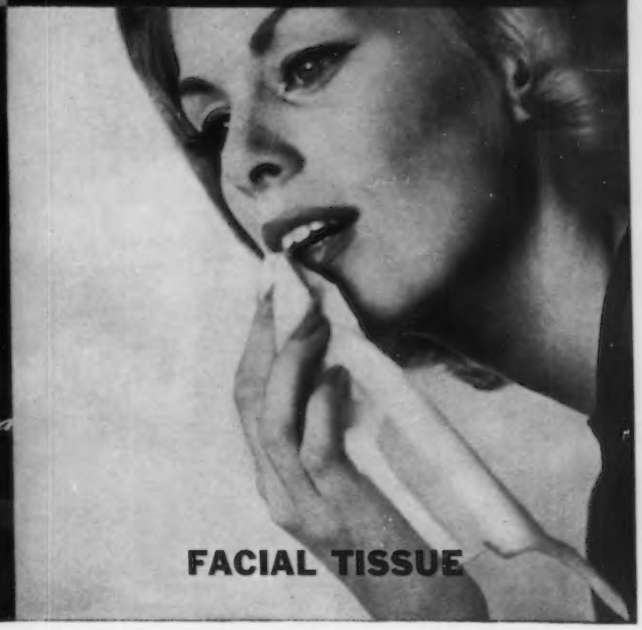


Eight papers... improved by a

Name your paper—and Alberta HI-BRITE Pulp will help you make it better! Now proved in more than one hundred North American paper mills, Hi-Brite is truly the modern pulp for modern, quality papers.

Why does Hi-Brite do so much more than ordinary pulps? *First,* it's produced exclusively from northern spruce and lodgepole pine. *Second,* Hi-Brite pulp is "cold-blown" from Kamyr continuous digesters to preserve the bonding strength of the long, thin fibers. *Third,* Hi-Brite's ultra-modern bleaching process actually improves the inherent strength of the unbleached fibers.

Hi-Brite . . . and Hi-Brite alone . . . has this



single pulp—Alberta Hi-Brite®!

unique combination! The result—a uniform pulp of gleaming whiteness with outstanding bonding properties!

Get the full story on Alberta Hi-Brite Bleached Sulphate Pulp... and the advantages it offers your paper-making operation. St. Regis Paper Company, 150 East 42nd Street, New York 17, N. Y.

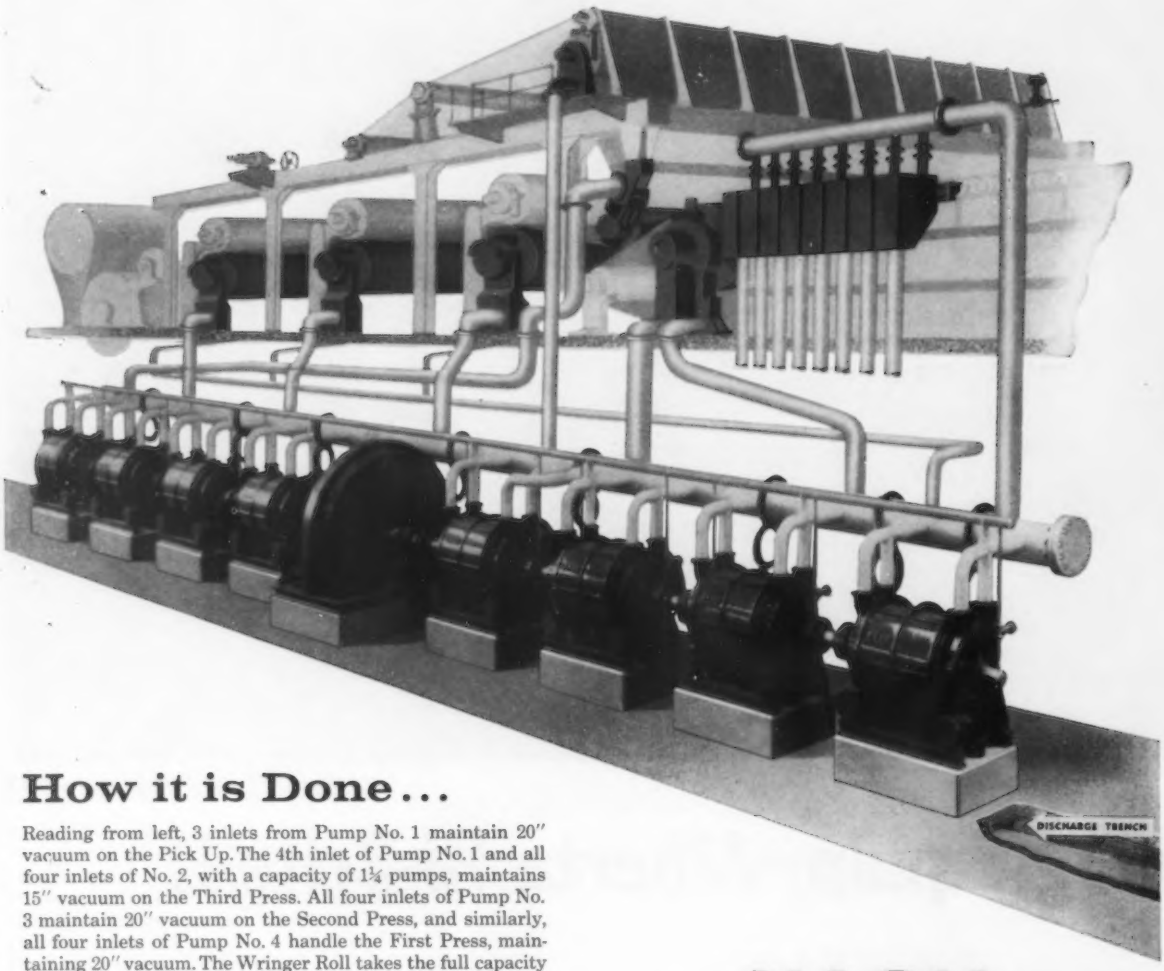
KRAFT DIVISION

St.Regis PAPER COMPANY

NOW-

Nash Vacuum Pumps of one size, driven if desired, by a single motor, will handle all of the varied vacuum and capacity requirements of an entire Paper Machine.

Designed by Nash especially for Paper Mill service, the new 5308 vacuum pump has four separate suction inlets, each of which functions independently of the others. This offers the machine operator great flexibility, since these may be used in any desired combination to produce the variety of capacities and vacuums required by the various functions of a paper machine. These may be varied at will. Great simplicity of operation, and economy of maintenance results. The enclosed discharge trench makes possible a comparatively silent installation and permits easy and economical water recovery.



How it is Done...

Reading from left, 3 inlets from Pump No. 1 maintain 20" vacuum on the Pick Up. The 4th inlet of Pump No. 1 and all four inlets of No. 2, with a capacity of 1¼ pumps, maintains 15" vacuum on the Third Press. All four inlets of Pump No. 3 maintain 20" vacuum on the Second Press, and similarly, all four inlets of Pump No. 4 handle the First Press, maintaining 20" vacuum. The Wringer Roll takes the full capacity of Pump No. 5, requiring 10" vacuum. The High Vacuum Couch Box takes a pump and a half, 4 inlets of Pump No. 6, and two inlets of Pump No. 7, maintaining 20" vacuum. The remaining two inlets of Pump No. 7 maintain 10" vacuum on the Low Vacuum Couch Box. Only one inlet of Pump No. 8 is required to handle the Felt Conditioners at 10" and the remaining three inlets of Pump No. 8 handily maintain 10" vacuum on the Wire Boxes.

NASH
ENGINEERING COMPANY
South Norwalk, Connecticut

LYTRON® 6

A new co-polymer latex–exempt from Food Additive Amendment for web coating food board used in throw-away paper cups, plates and other single service containers

- styrene copolymer–internally plasticized for greater processing efficiency.
- clear, glossy, non-yellowing coating–stays white during processing and after long storage periods
- grease-resistant; resistant to cold or hot boiling water
- products won't stick, even at high dispensing machine temperatures
- odorless and tasteless–no "paper odor" even after contact with hot water; no "paper taste" imparted to contents

For samples and complete product and regulation data on Lytron 6, write to Monsanto Chemical Company, Plastics Division, Room 731, Springfield 2, Massachusetts.

Monsanto

MONSANTO DEVELOPER IN **PLASTICS**

MACHINE DESIGN COURTESY JOHN WALDRON CORP.

PJT NEWS OF SUPPLIERS

J. H. W. Conklin

M. T. Craig

Stanley Steel Strapping, division of The Stanley Works, New Britain, Conn., has named James H. W. Conklin of West Hartford general sales manager. He has been general sales manager of Pratt & Whitney Co., Inc., manufacturer of machine tools and small tools, since 1959.

Mr. Conklin, who has had varied experience with several firms in the field of material handling has served two terms as president of the Material Handling Institute.

Milton T. Craig, sales representative for Stanley Steel Strapping in Rhode Island and eastern Massachusetts has had two Bay State counties, Essex and Middlesex, added to his territory.

Mr. Craig has been with Stanley Steel Strapping, division of The Stanley Works, New Britain, Conn. since 1954.

Prenco Engineering, Watertown, N. Y., chemical and mechanical engineering firm organized last year by C. L. Fluno and F. A. Emmerling has been awarded an engineering contract for a new groundwood slush pulp handling system for the Stevens & Thompson Paper Co., Greenwich, N. Y.

Nalco Chemical Co., manufacturer of industrial chemicals, has announced a million-dollar program involving purchase of land and building conversion and modernization.

T. C. Jones, Nalco president, said contracts have been signed for the purchase of approximately ten acres and four buildings included in three parcels of land in the Clearing Industrial District, Chicago.

The transactions involve land and buildings of Klemp Metal Grating Corp., 6601 South Melvina St., and Hamler Industries, Inc., 6025 West 66th St., and vacant land of Commonwealth Edison Co.

The acquisitions increase Nalco's land holdings in the Clearing area to 25.1 acres. The four buildings involved will be modernized and converted into laboratory, office and manufacturing facilities.

Oakite Products, Inc., manufacturers of specialized chemical compounds for industrial cleaning, sanitizing, and metal treating, has appointed Daniel P. Brennan technical service representative in midtown New York City.

Mr. Brennan has been on the staff of Oakite's technical service laboratory since 1957. In his new position he replaces Edmond Malone, who has been transferred to New Jersey.

The New Jersey Zinc Co. has established a district sales office in Atlanta, to provide improved service to its customers in the South.

Robert W. Munson will be in charge as Southern District sales manager. Andrew G. McFadden, who has served many of the customers in this territory, also will have his headquarters in Atlanta. Harold Hedden of Coral Gables, Fla., will continue to act as consultant with respect to accounts in the southern Florida area.

D. R. Alexander

J. O. Ross Engineering, division of Midland-Ross Corp. has transferred David R. Alexander from the Boston office to the New York office. Mr. Alexander is a 1956 mechanical engineering graduate of the University of Maine, where he completed the five year Pulp and Paper course.

He joined the Ross Organization in 1956 and started his sales career in 1958, in the Boston office. In New York, he will service the New York State paper mills.

Mr. Alexander worked at the Scott and Robert Gair paper mills during summer months, while attending the University.

Nopco Chemical Co., Newark, N. J., has installed new laboratories for its Industrial and Fine Chemicals Division. The laboratories are equipped to duplicate many of the processes found within industry.

In the paper laboratory Nopco specialists can simulate pulping, stock preparation, papermaking and coating operations. Special equipment is capable of reproducing mill system turbulence for foam control studies and general evaluations of Nopco additives.

OBITUARIES

John Paul Ekberg, 76, a director and retired vice president of the Chesapeake Corp. of Virginia, kraft-paper producer of West Point, Va., died July 21.

James Good Conley, 66, former president of the Groundwood Paper Manufacturers Ass'n. and general chairman of the Sulphite Paper Manufacturers Ass'n., died July 17. His home was in Chittenango, N. Y. Until his retirement last year he was general manager of Fraser Paper, Ltd., in New York City.

The NEW

ECONOMY

STOCK VALVE

Using the proper alloys with precision machined knife gate construction.

Check these ECONOMY advantages:

- √ Highest strength ratio to weight.
- √ Easy to install
- √ Quality workmanship.
- √ Lowest cost for equal performance.
- √ Operated by hand, air cylinder or motorized.

Write for NEW Bulletin #100 describing the complete line of ECONOMY stainless stock valves for the process industries.

ECONOMY
Equipment Company
Valve Division
4808 S. Hoyne Ave. • Chicago 9, Ill.

How much a year can the Foxboro Stock Blending System save your company . . .

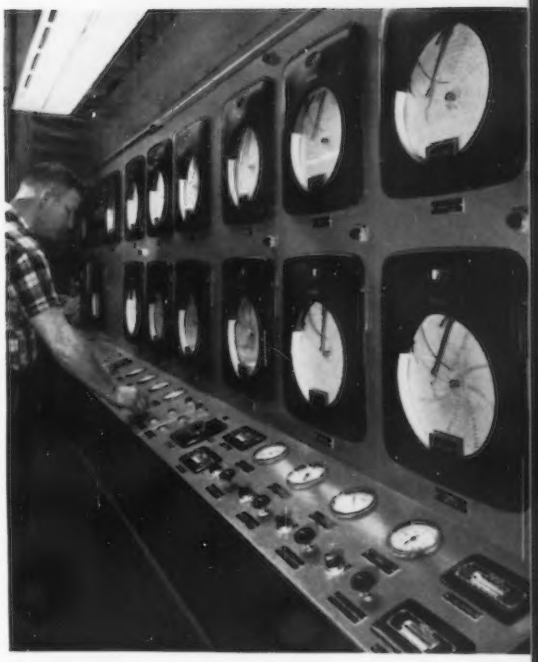
by increasing percentage of first quality paper? ..... $____

by reducing overall waste? ..... $____

by eliminating batch beaters? ..... $____

by reducing down time between runs? ..... $____

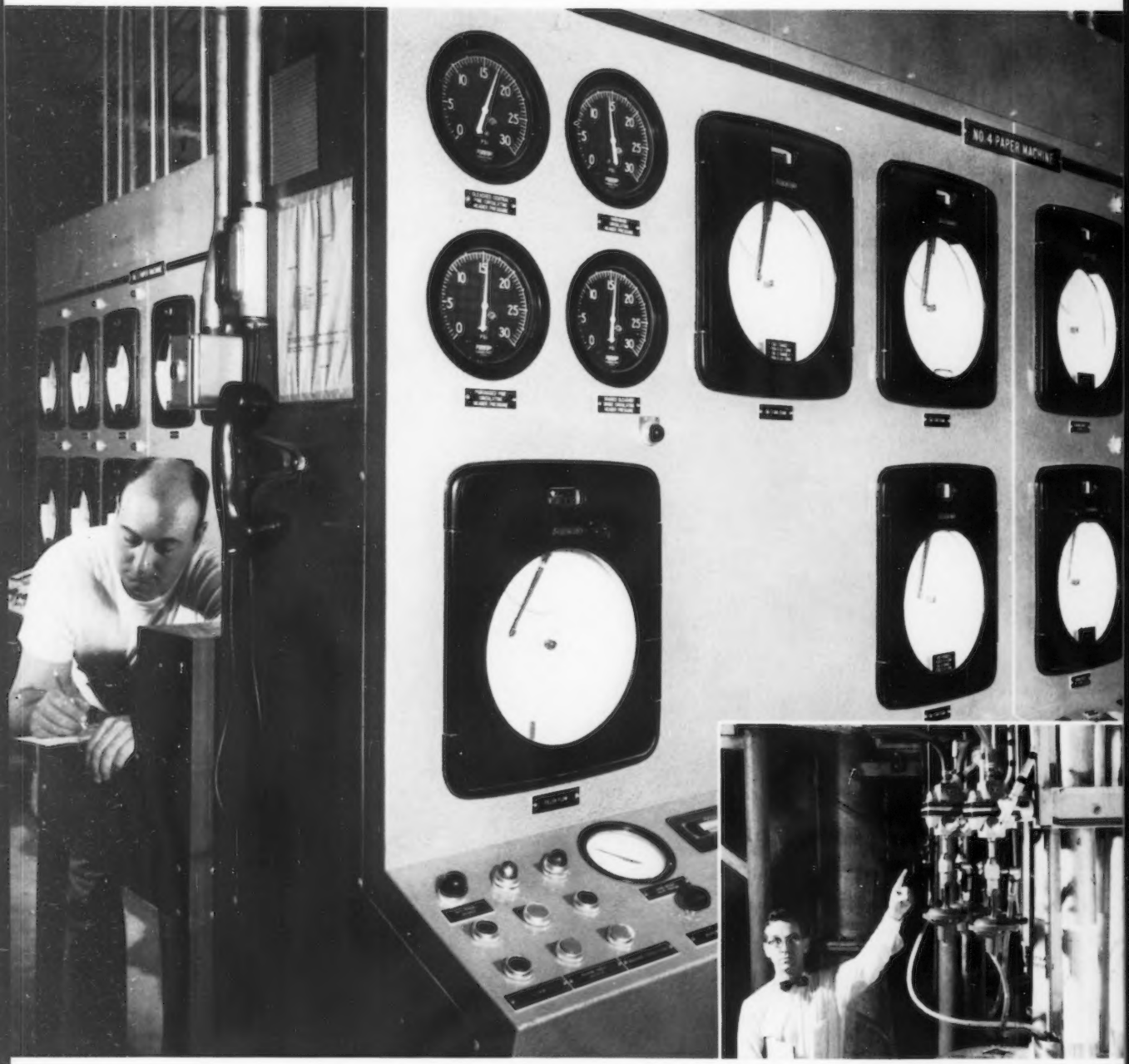
by increasing total production? ..... $____



to help you answer this question take a quick look at the experience of one great papermaker . . .

at S. D. Warren Company's

Foxboro Stock increase



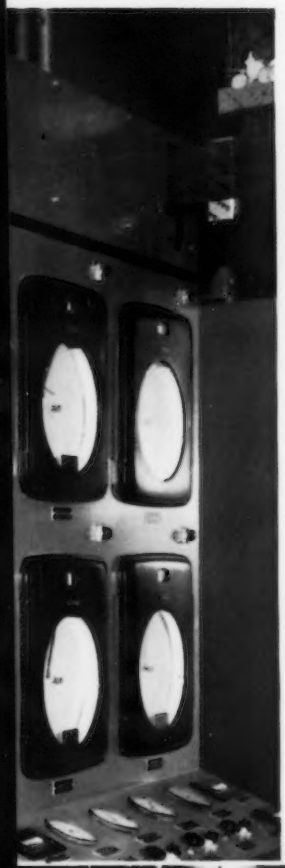
All four paper machines at Central Mill are equipped with Foxboro Stock Blending Systems. Control panels for Machines 3 and 4 are shown above. Machine superintendents report that because the Foxboro systems require less down time between runs, over-all production has been increased. Engineers and contractors for this program were Sumner Sollitt Company, Chicago.

Foxboro Magnetic Meters, 1/10 in., 3/16 in., and 1/2 in. diameter, control dye flows to mixing hoppers above each paper machine. Quick-disconnect hose permits using same meters to serve several dye distribution headers. Dye proportions are set at control panel.

PHOTOGRAPHY BY JOHN W. MOORE, JR. — PITTSBURGH

Central Mill

Blending Systems cut waste, production of first quality paper



batch beaters eliminated . . . stock, dyes, additives blended continuously, automatically

More first quality paper . . . batch beaters completely eliminated . . . waste slashed. These are just a few of the cost reductions Foxboro Stock Blending Systems have produced at S. D. Warren's Central Mill, Muskegon, Michigan.

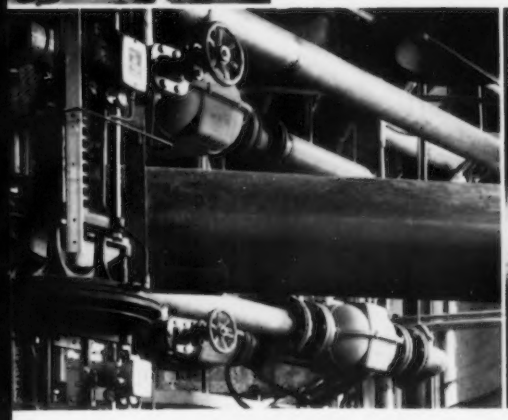
The unique Foxboro systems handle the whole job of stock proportioning. Machine tender sets desired stock, dye, and additive proportions on control panel for his machine — then walks away. Foxboro does the rest — blends pine, hardwood, broke, and purchased pulp; adds dyes and additives in proportions desired. System even adjusts for changes in machine demand while holding all proportions exactly constant. And it's all done continuously — automatically.

Foxboro Stock Blending Systems were installed on all four of Central Mill's Paper Machines as a major step in their continuing modernization program. Installation was handled by Foxboro during normal down-time periods so no production time would be lost.

Everyone at Central Mill — from top management down — is extremely enthusiastic about the performance of these Foxboro systems. You'll be enthusiastic, too, when you discover how quickly they'll pay for themselves in your mill — through better quality paper — through increased production. Ask your Foxboro Field Engineer for full details. The Foxboro Company, 238 Norfolk Street, Foxboro, Massachusetts.

FOXBORO

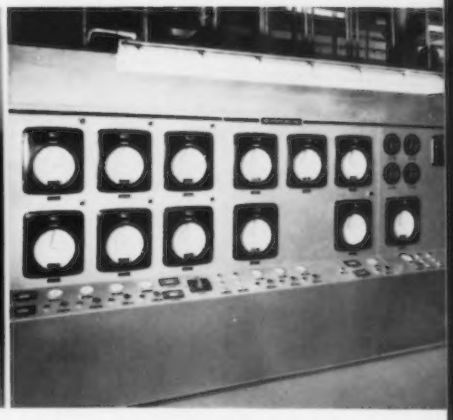
REG. U. S. PAT. OFF.



Foxboro Magnetic Meters, 3 and 4 in. diameter, control flow of stocks to blending chests — completely eliminate the need for batch beaters. Magnetic Flow Meters have no flow restriction of any type — cannot foul or plug up. Measurement is linear — accuracy guaranteed within ± 1%.

Foxboro d/p Cell* pressure transmitters are mounted right in the side of main feed-stock headers at the S D. Warren Mill. Precise operation of this entire blending system is assured by the accuracy and reliability of these sensitive pressure transmitters.

**Reg. U.S. Pat. Off.*



Foxboro instrument panel for #2 Machine gives operator complete control of the blending operation. On it are mounted flow-proportioning controllers for four stocks as well as for dyes and additives. Also, the percentage setting dials which proportion each stream to total system flow.

Other Foxboro Systems that can help you improve production in the 60's...

Foxboro Digester Control. Uniform pulp, cook after cook — is what you get with Foxboro Automatic Digester Control.

To start a cook, operator simply turns a single knob — and Foxboro takes over. Results: perfectly controlled digester circulation with virtually no liquor pull-over; uniform permanganate; practically no rejects. All automatic — from fill to blow — all resulting in high yield and excellent uniformity.

Foxboro Caliper Profiler. Put in a sample strip, push a button, and in a matter of minutes the Foxboro Caliper Profiler gives you a continuous chart record of sheet thickness — all the way across the sheet.

No time-consuming spot checks with hand micrometers — no awkward, cumbersome testing machines. The Foxboro Profiler shows you exactly where caliper is off — offers a new high in quality control.

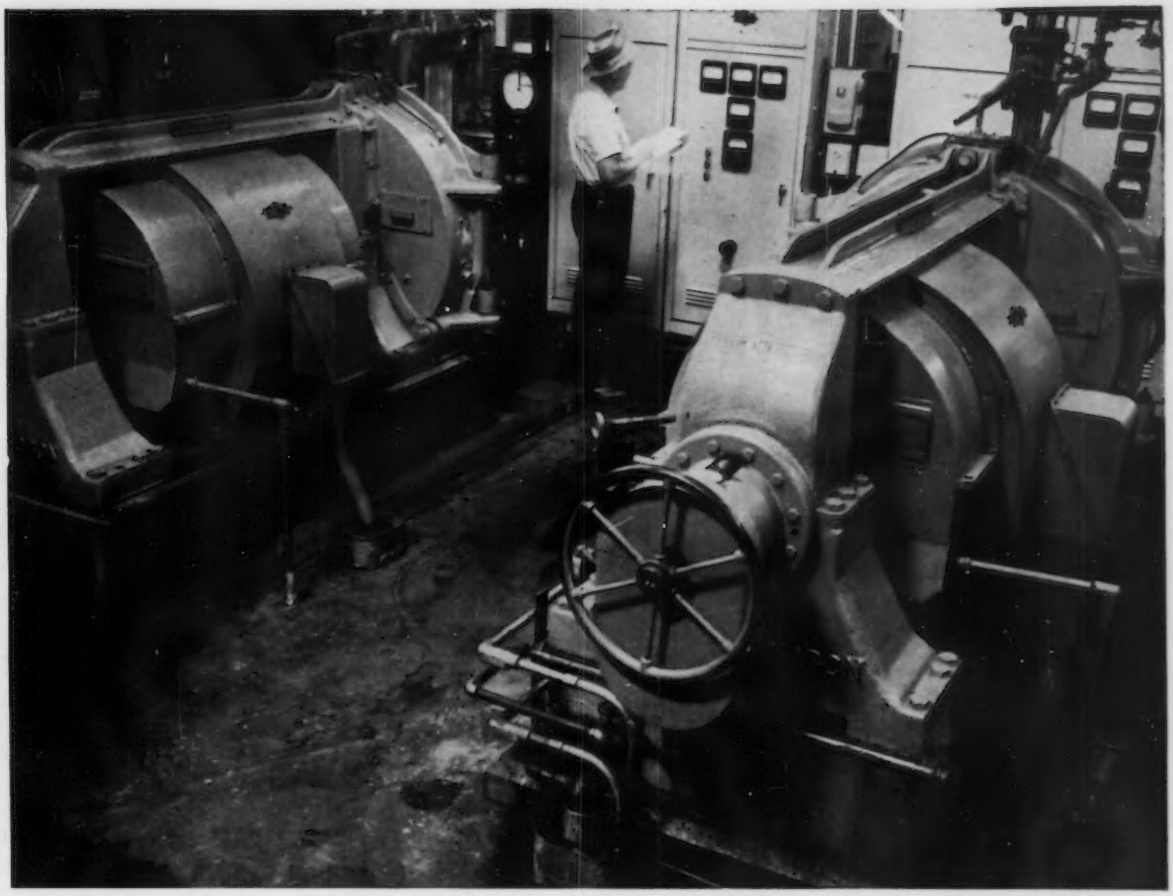
Foxboro Sheet Moisture Control. Direct measurement of sheet moisture at the reel . . . fast, precise control of steam to the dryers . . . moisture control of any weight stock: tissue, pulp, kraft, newsprint, board or specialties. You get all this and more when you install the Foxboro Sheet Moisture Control System.

An invaluable aid to improved quality paper; to elimination of costly rejects; to shipping at precisely the moisture content specified.

REG. U.S. PAT. OFF.
Warren's
STANDARD

This advertisement is printed on Warren's Lustro 100#, manufactured at their Central Mill, Muskegon, Michigan

FOXBORO
REG. U. S. PAT. OFF.



Two of the 33 E-M Synchronous Motors driving refiners at Masonite. The motors are rated 450 hp, 900 rpm, unity or 0.8 leading power factor. The motor controls shown are high interrupting capacity, current-limiting SA-FUSE type — also manufactured by E-M.

EIGHT YEARS AGO MASONITE SELECTED A 450 HP E-M SYNCHRONOUS MOTOR— *TODAY THEY HAVE 33 ON REFINER DRIVE!*

Masonite Corporation of Laurel, Mississippi now uses a total of 14,850 E-M horsepower!

Here are some of the reasons why Masonite's use of big E-M Refiner Motors has grown to 33 in just eight years!

THEY SAVE POWER DOLLARS. E-M Synchronous Motors have electrical and mechanical designs matched for high efficiency in converting electrical power to mechanical power.

THEY CORRECT POWER FACTOR. Unity or 0.8 leading power factor designs improve mill power factor to further reduce power costs. Each 450 hp, 0.8 leading power factor motor provides 260 reactive KVA to offset low power factor of induction motor mill drives.

THEY NEED LITTLE ATTENTION. Duty tested designs keep the motor interior clean and the windings dry — motor life is prolonged and maintenance is at a minimum. E-M Refiner Motors are "customized" for the rigors of paper mill service by specialists with nearly 60 years' experience in *big* motor application.

So, when you need paper mill motors with proven dependability, call your nearby E-M Sales Engineer. Also, write the factory today for your free copy of illustrated Booklet No. 49 which features Protective Motors.

ELECTRIC MACHINERY MFG. COMPANY
Minneapolis 13, Minnesota

E-M

1200-TPA-2180

Specialists ***in making motors do EXACTLY WHAT YOU WANT THEM TO***

HAMMERMILL PAPER COMPANY

gets maximum fiber recovery with

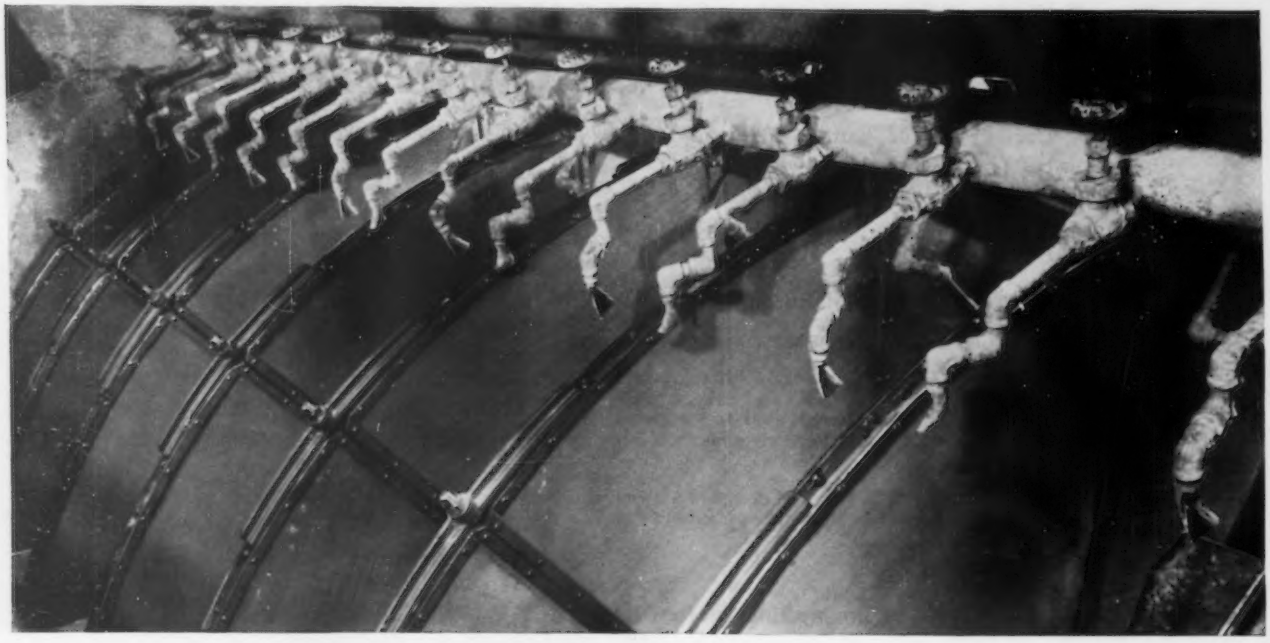
AMERICAN DISC TYPE SAVEALL

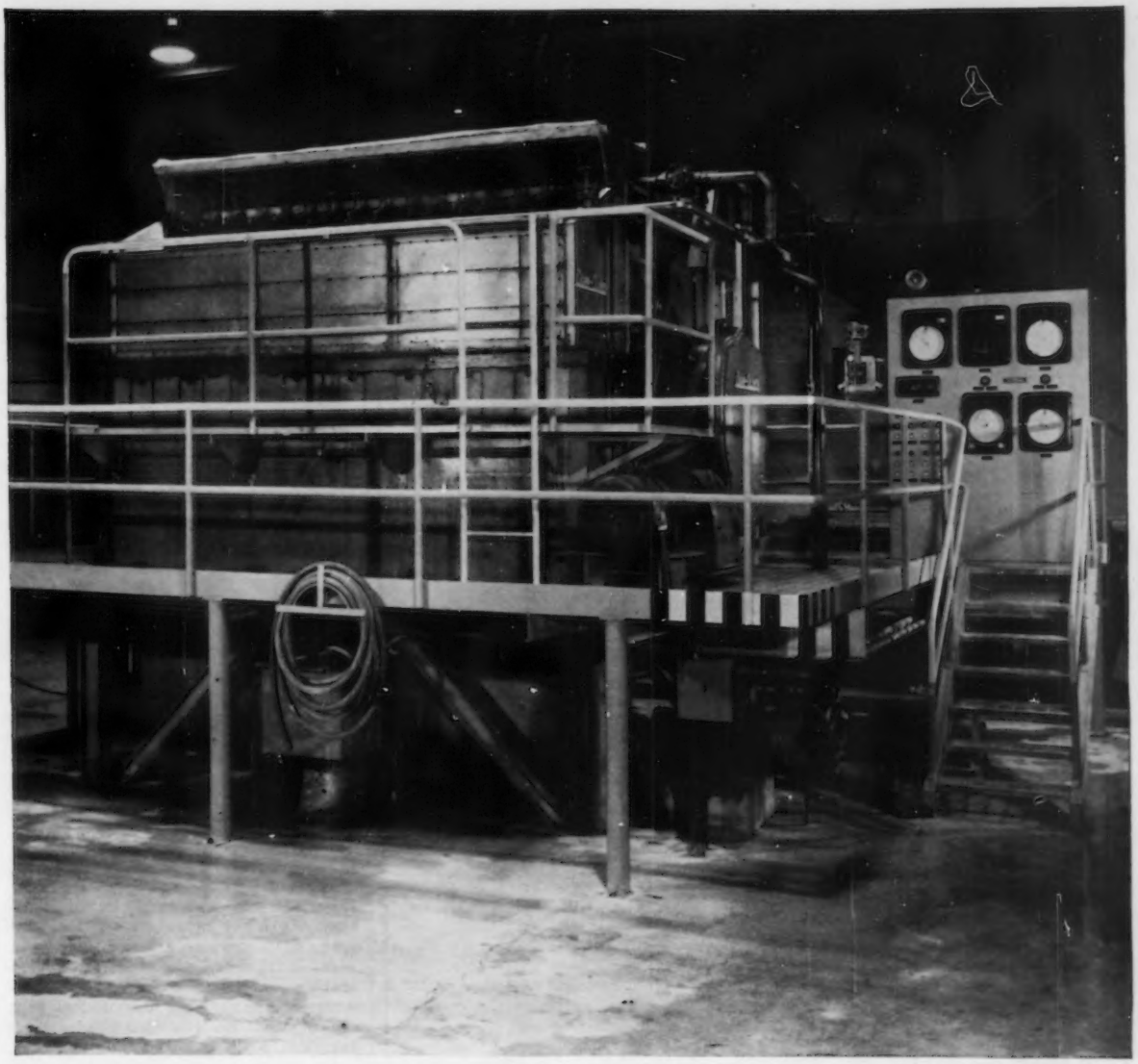
Effluent clarity ranges 0.0 to 0.25 lb. per 1000 gals.

Another example of the paper industry's wide acceptance of the American disc-type Saveall for maximum recovery of fiber from white water is seen in this installation at the well-known Hammermill Paper Company's Erie, Pennsylvania, Division.

The equipment handles white water from Hammermill's No. 7 machine, producing various grades of papers including Hammermill Bond and Hammermill Offset. Maximum flow is 1,200 g.p.m. Effluent ranges from 0.0 to 0.25 lb. per 1,000 gallons, showing the high rate of recovery achieved.

As well as excellent performance, the American Saveall offers the advantage of small space requirements, easy and quick replacement of filter disc sectors and fully automatic, continuous operation. Two sizes are available—9 ft. dia., with a maximum of 16 discs having 1,790 sq. ft. filter area and occupying 28 ft. x 12 ft. floor space; and 7 ft. dia. with a maximum of 10 discs and 700 sq. ft. filter area, requiring 9 ft. x 17 ft. floor space. For more information, write for Bulletin 3306 to Dorr-Oliver Incorporated, Stamford, Connecticut.





▲ Installation at Hammermill illustrates compact design and small floor space requirements of American Saveall.

◀ Close-up shows easily removable disc sectors and new "less splash" sluicing nozzles for continuous removal of recovered fibers, which are then returned to the stock chest.

DORR-OLIVER

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures
(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

		June 18	June 25	July 2	July 9	July 16
	1960	100.3	97.2r	89.2r	60.1r	86.3
		June 20	June 27	July 4	July 11	July 18
	1959	96.7	96.0	71.7	71.5	90.3

"r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	96.7	97.9	98.3	97.0	97.9‡	96.3‡	—	—	—	—	—	—	—
1959	87.8	90.5	93.2	94.4	95.5	95.6	84.5	96.0	92.4	97.4	96.2	86.6	94.0

‡ Preliminary

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

COMPARATIVE YEARLY SUMMARIES

	1953	1954	1955	1956	1957	1958	1959	1960
Year to Date	94.2	91.4	95.6	99.1	92.0	85.8	91.2	96.2
Year Average	92.3	91.6	96.2	97.9	90.4	87.0	94.0	—

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

		June 18	June 25	July 2	July 9	July 16
	1960	93	94	90	50	74
		June 20	June 27	July 4	July 11	July 18
	1959	98	98	82	56	84

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	92	95	94	93	94	92	—	—	—	—	—	—	—
1959	89	94	95	94	96	96	83	97	92	96	94	80	92

† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING July 16, 1960	LAST WEEK ENDING July 9, 1960	CUMULATIVE TO DATE Jan. 1 to July 16, 1960, incl.
% Activity	74%	50%	91%
Total	248,079	174,810	8,598,405
Containerboard—Domestic Use	134,715	98,685	4,413,165
Liner	92,862	69,478	2,943,080
Corrugating Material	37,302	26,549	1,324,994
Chip & Filler Board	4,551	2,658	145,091
Boxboard—Domestic Use	74,601	48,840	2,690,293
Folding	42,440	25,678	1,606,666
Set-Up	5,998	3,847	303,518
Special Food Board	26,163	19,315	780,109
Other Paperboard	38,763	27,285	1,494,947
Containerboard Type	21,650	14,018	713,415
Boxboard Type	17,113	13,267	781,532
Total Orders			
Received	272,867	182,700	
Unfilled End of Week	474,165	449,939	

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STRUCTURAL AND ARCHITECTURAL DESIGN

REPORTS APPRAISALS ESTIMATES AND SURVEYS

PJT NEW LITERATURE

Fluid Flow Rate Alarms

Gives details and examples of rotameter accessories to provide signalling and simple control functions. Bulletin 175. Brooks Rotameter Co., Hatfield, Pa.

Log Saw Bulletin

Tells how Model DLS high-speed double-lane log saw automatically cuts long lengths of toilet tissue, roll towels and other interfolded products into short lengths at rates to 180 rolls per minute. Bulletin 151. Dietz Machine Works, 20 W. Berkley St., Philadelphia 44, Pa.

MegopaK Catalog

Outlines Honeywell's MegopaK line of hard-pack, small-diameter, mineral-insulated thermocouples. Also contains specifications and ordering information and prices on bulk material, elements and complete assemblies. Catalog G 100-4, Minneapolis-Honeywell Regulator Co., Wayne & Windrim Aves., Philadelphia 44, Pa.

Mechanipak Seals

Describes the engineering and application of this compact, ready-to-install seal. Also outlines temperature, pressure, shaft speed and other critical operating information necessary when selecting or utilizing mechanical sealing devices. Bulletin AD-150. Garlock Inc., 446 Main St., Palmyra, N. Y.

Modern Plant Lighting Practices

Entitled "Footcandle Levels and Interior Lighting Design" this 60-page pocket-size manual contains valuable information including tables which apply to modern lighting practices for various types of luminaires and light sources. Describes the Lumen method of calculating interior lighting; and the Point-by-Point method of exterior floor-lighting. Includes lamp data and wiring suggestions. Booklet A-7235. Price 10c. Westinghouse Electric Corp., P. O. Box 388, Bloomfield, N. J.

Paper Tension Control

Includes description of the operation of GE's tension head and potentiometric recorder controller at various sections of a paper machine. Also discusses applications and features of the system as used on lineshaft-driven machines. Bulletin GET-2741-7A. General Electric Co., Schenectady 5, N. Y.

NEW IDEA IN MATERIAL HANDLING CUTS COSTS AT BIRD & SON, INC.

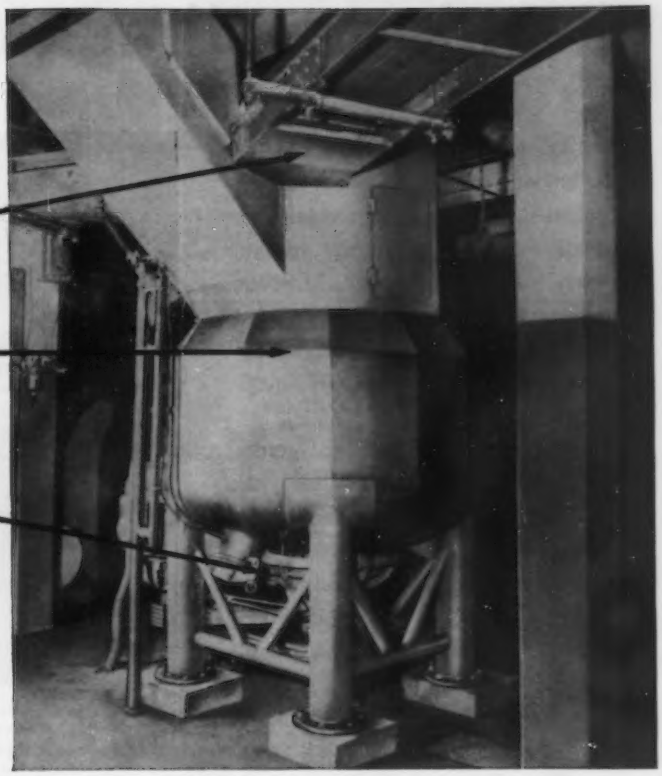
From
Converting Mill . . .

Via Conveyors

To Pulper

To Pump*

To Pulp Mill



With the Impco Solvo® Pulper

The Model 2U Solvo Pulper, playing a dual roll at Bird & Son, Inc., East Walpole, Massachusetts, has sharply reduced previous material handling costs. It is operating continuously under automatic control as both a material handler and a pulper. Boxboard broke from the converting machines is delivered by conveyors to the Solvo which simultaneously pulps and pumps it to the pulp mill. The units' single 50 HP motor handles both pulping and pump-away demand at a 24 ton/day rate.

This is one of a wide variety of Solvo Pulper applications. Others include de-ink cooking, dry end broke handling, paper machine furnish pulping, transfer of high yield cooked chips to refiners as well as the normal pulping of broke, wet strength and waste paper. Units are available for any capacity requirement.

*The pulping element, extractor plate and stock pump are one rotating assembly.

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IMPROVED MACHINERY INC.
NASHUA, NEW HAMPSHIRE
In Canada: Sherbrooke, Machineries Limited, Sherbrooke, Quebec

Armco Stainless Protects
Combats slime and corrosion

It's difficult for slime to build up on the smooth surfaces of paper-making equipment made from Armco Stainless Steels. What little does accumulate generally comes off easily. Morever, stainless steel's resistance to corrosion helps eliminate product contamination, trims maintenance, and keeps equipment on the job.

Armco's complete range of grades makes it easier to match stainless types with your own service conditions. For extra hardness and strength with corrosion resistance, you can specify Types 410, 431 or special Armco 17-4 PH Stainless. To cover a wide variety of corrosive conditions, you also can select from the workhorse chromium-nickel Armco Stainless Steels—Types 302, 304, 304L, 316, 316L, and 317.

If you want more facts about where and how to use stainless steels, just fill in and mail the coupon for your free copy of *How Armco Stainless Steels Improve Pulp, Paper and Profit*—or ask for it from an Armco Distributor listed in this ad.

Regulator, head boxes and side panels on this new fourdrinier are made of stainless steel to keep maintenance low.

Stainless Steel

This easy-to-clean flow box is fabricated from Type 304 stainless steel.

A midwest mill reports that stainless backing and facing cloth on stainless winding wire and rods average 6 to 8 times the life of non-ferrous material on cylinder molds.

Paper Quality in paper making

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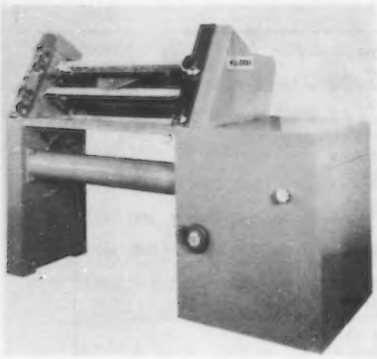
NEW EQUIPMENT & SUPPLIES

Reverse Roll Coater For Medium Width Webs

A Reverse Roll Coater called the Waldron Model "RA" extends the existing line of standard coating



machines manufactured by Waldron-Hartig Division of Midland-Ross Corp., New Brunswick, N. J. The Model "RA" is specifically designed and priced for narrow and medium width pilot plant and production processes for web widths up to 48 inches.

Some of the features of the new coater are: fully machined, heavy steel frame construction, complete and centralized controls for ease of operation, accurate and repetitive metering adjustments, pneumatically loaded backing roll and simplified removal of coating rolls. The coater is available as a single unit, or an integral part of a completely integrated Waldron coating line.

Two Dispersant Slimicides, FDA Approved, Now Available

Two organo-sulphur slimicides, said to have superior killing and dispersion action on mill micro-organisms, have been announced by Nalco Chemical Co., 6216 West 66 Place, Chicago 38, Ill.

Available in a liquid form called Nalcon 242, and a ball briquette form called Nalcon 245, both have anionic dispersant properties. Neither contains phenolic materials nor heavy metals.

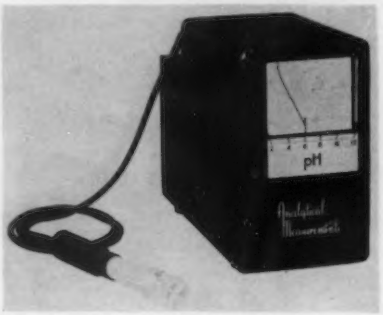
According to Nalco, Nalcon 242 and 245 have built-in bactericidal, fungicidal and dispersant characteristics specifically for control of the troublesome slime formers in pulp and paper mill systems. Both have been approved by the FDA for use in food packaging papers. Nalcon 245 is available in fiber drums that hold approximately 270 pounds. Nalcon 242 is shipped in non-returnable 55-gallon lined steel drums that hold approximately 510 pounds of the chemical.

Locates Accidental Grounds on Live Lines

In some cases, where it previously took up to three days to locate accidental grounds, the improved Faultfinder, a combination ground detector and fault finder, can now locate trouble in 20 minutes—without stopping production, it is reported. Marketed by Parr Manufacturing Corp., the Faultfinder is said to quickly locate accidental grounds on power systems (both a.c. and d.c.) up to 600 volts, while the system is energized. Imposing only two amperes on the circuit, it cannot damage equipment on the line.

Meter Continuously Records pH on Strip Chart

For the first time, a combined pH meter and strip chart recorder is available at a price that is said to be lower than most conventional pH meters alone. This instrument utilizes an electronically modulated amplifier that compensates for line voltage fluctuations and uses standard radio tubes. A strip chart recorder forms the front panel of the instrument and contains a 63-foot roll of chart paper that will last for 31 days at 1 inch per hour. Other chart speeds



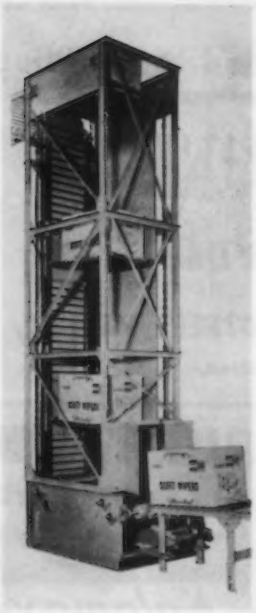
are available up to 16 inches per hour by a simple gear change.

A pressure sensitive coating is used on the chart paper so that annoying ink and clogged pen problems are eliminated. Connections for insertion of a platinum resistance thermometer provide automatic temperature compensation. A switch on the front panel permits disconnection of the chart drive so that the instrument becomes an indicating pH meter. The Analytical's pH Probe Unit provides a unitary glass electrode system completely protected by polyethylene which makes possible pH monitoring.

Vertical Conveyor Self-Loading, Unloading, Needs Less Space

The vertical movement of packaged or unit commodities is employed by Standard Conveyor Co. in its Escaveyor. It has the continuity of a belt conveyor and loads and unloads itself automatically.

The only machine of its type on the market today, Escaveyor is said to take less floor space than a monostrand or straight lift conveyor. Escaveyor is suited for vertical movement of commodities in buildings in which lack of space prohibits installation of ordinary inclined conveyors. It may be used in up service, down service, or be made reversible. The basic principle used in this machine provides horizontal flights for



carrying which fold automatically to assume a space-saving vertical position for the return trip. Escaveyor is available in a wide range of capacities to suit particular needs. Illustrated literature may be obtained from Standard Conveyor Co., North St. Paul 9, Minn.

A LINE OF PLASTIC PIPE, with insert fittings, is announced by Crane Co. to have a 50-year life expectancy. The pipe is made of high-density polyethylene and the fittings are made of polypropylene. Trade marked Poly III, the plastic pipe is available in sizes of ½-inches through 2 inches. Only one man with three basic tools is needed to install the pipe, it is said. The piping may be used to transport both corrosive acids and alkaline solutions. Crane Co., 836 So. Michigan Ave., Chicago 5, Ill. will supply further information.

Antifoam Functions Under Acid Conditions

Development of an antifoam formulated specifically to function under acid pH conditions encountered in paper machine operation is announced by Nalco Chemical Co., 6216 West 66th Place, Chicago, Ill.

The material, a liquid blend of esters, emulsifiers and surface active agents, is called Nalco 71-M. It is designed to break up visible foam, control bubble formations and free entrapped air to prevent foam from occurring.

The antifoam has a freeze-thaw recovery of 30° F. and a cloud point of 30° F. It emulsifies instantaneously, without stirring, even in water as hard as 400 p.p.m.

In extensive mill applications, Nalco 71-M prevented floating stock in the headbox and reforming of bubbles on the wire. Sizing or furnish was said to be not affected, and picking was halted.

The material can be fed continuously either in dilute or concentrated form by a chemical pump. Dosages vary between one-tenth and three-quarters of a pound per ton of fiber. Nalco 71-M is shipped in non-returnable steel drums containing 380 pounds net.

NO Hard or Soft Spots at the Winder with . . .

RMF hydroscillators

This simple, compact oscillating unit provides a constant horizontal shifting motion while the sheet is being wound into a roll. This back and forth movement prevents wrinkles from "tracking" and building up throughout the roll. No more wrinkles, no more hard and soft spots!

Check your finishing room...our RMF Hydroscillators will give you a higher percentage of salable paper. For more information send for Bulletin No. 101.

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Concrete Gravity Air-Water-Wash type water Filtration Plant producing, at low cost, water with turbidity 0, color under 5 and iron 0.05 p.p.m. Fe.

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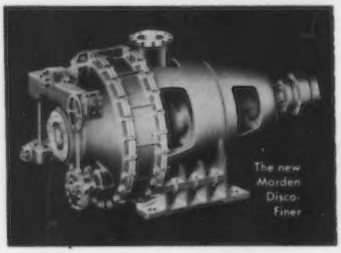

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1 can be removed and the other continues operating

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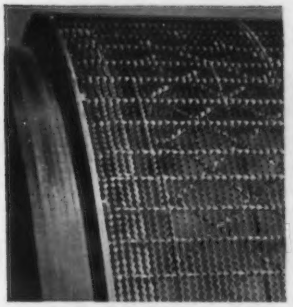
ZIGZAG*

winding wire

Means Better Dandy Roll Performance



New ZIGZAG* wire gives you better dandy roll performance because of increased drainage through cover of dandy roll and reduced water throw. It eliminates the need for double covers and spiral or diagonal seams, thus assuring a tighter fitting straight seam cover. New ZIGZAG* wire improves paper quality by decreasing filling and sheet streaking.

For complete information on the ZIGZAG* wire, write or call:

*PATENT APPLIED FOR

THE SINCLAIR COMPANY

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Another Plant To Serve You

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$5,000 to $50,000

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Finding and landing THE ONE BEST JOB requires sound analysis, careful planning, proper contacts and skillful negotiation.

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GEO. M. SUNDAY & ASSO.

PERSONNEL CONSULTANTS TO THE PULP, PAPER & ALLIED INDUSTRIES

6 East Monroe, Chicago ANdover 3-1970

TF

PAPER CHEMIST

with mill experience in paper and coating wanted for technical sales service. Willing to travel as required. Send resume, photograph and salary required. Replies will be treated in strict confidence. Address Box 60-117 care Paper Trade Journal. A-15

Help Wanted

WANTED

MAINTENANCE SUPERINTENDENT

Mature Man, with heavy experience in supervision of electrical and mechanical preventive maintenance program. B.S. Degree in E.E. preferred. (E.E. plus M.E. would be ideal). To co-ordinate well-established maintenance departments into one efficient unit. This opening represents a real **challenge** to the right man who is able to organize by working with and through people. Pulp and Paper company located in Virginia. Salary open, commensurate with qualifications and experience. Excellent fringes and benefits.

Write, giving resume of education and experience to: Box 60-158 c/o Paper Trade Journal.

A-22

NORTHEASTERN Cylinder Board Mill needs qualified Chemist with some production background and technical experience. Salary open. Address Box 60-152 care Paper Trade Journal. A-22

WANTED FOR WORK IN ISRAEL

TOUR BOSSES

FOR MODERN TWO-MACHINE MILL

OPERATING ONE STRAIGHT FOURDRINIER ON FINE AND KRAFT GRADES 30 TO 200 LBS. AND ONE 126" BELOIT FOURDRINIER PICK-UP COMBINED MACHINE WITH PRE-DRIERS AND YANKEE ATTACHMENT PRODUCING LIGHT-WEIGHT PAPERS 10 TO 35 LBS. AT HIGH SPEEDS.

OPERATING EXPERIENCE WITH COMBINED MACHINE IS ESSENTIAL.

EXCELLENT SALARY AND LIVING CONDITIONS ON A CONTRACT BASIS FOR QUALIFIED PERSONNEL.

COMPLETE DETAILS OF EXPERIENCE AND NAMES OF FORMER EMPLOYERS SHOULD BE FORWARDED TO:

AMERICAN ISRAELI PAPER MILLS LTD.

P.O. BOX 142, HADERA, ISRAEL

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Help Wanted advertisements continued on page 64

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10 Depot Plaza, White Plains, New York

Telephone—Rockwell 1-1130

BRANCHES: 400 Wash. Building, Madison 3, Wisconsin

Acepsa Albeniz #4418 Mexico 15, D.F.

5270 E. Wash. Blvd. Los Angeles 22, Calif.

PRINTING PRESSES

8—Toggie Heads for 9 x 12 New Era Presses
2—Hy-Rotos; 1-26" 3-color & 1-30" 3-color
2—30" 4-color Hess & Barker Hi-Speed Rotary Presses
1—41⅜" 5-color Staude Roto Gravure Press
1—60" 4-color W & H Flexo Press
1—51" 3-color Flexo Press
1—48" Cottrell Heinrich, 3-Flexo, 1-Gravure
1—42" 4-color Heinrich Tailprinter
1—42" 4 color Cottrell Heinrich Flexo Press
2—42" 4 color Hudson Sharp Central Impression Cylinder Flexo Presses
1—40" 6-color W & H Flexo Press
1—40" 4-color W. & H. Flexo Press
1—33" 6 color Modern Clipper Flexo Press
1—33" 4 color Wolverine Hydro-Printer
1—32" 4-color Schmutz Bag Press
1—31½" 4-color Heinrich Flexo Press
1—25" 3-color Potdevin Flexo Press
1—24" 2 color Manhasset Flexo Tailprinter
1—24" 5-color Kidder Celloprinter
1—24" 4 color Kohlbach Flexo Press
1—22½" 3-color Chambon with Die Cutting Unit
1—18" 2-color Potdevin Oil Ink Press

POWER PAPER CUTTERS

1—74" and 1—84" Seybold Precision
1—44" and 1—65" Seybold Precision with Auto Spacing
Seybolds: Dayton: 35", 56" & 84"; 20th Century: 64", 54" & 38"; Holyoke: 55"; 12Z: 85"; 10Z: 65", 50", 44"; 7Y: 34"; 3Y: 32"; Oswegos: 36"; Dexter: 50", 44" & 32"; C & P: 44"; National: 44".

CAMACHINES

102" & 160" Type 18
1—72" 10-10
1—52" Type 10
1—52", & 1—42" Model 24-7
1—42", 50" & 62" Type 6
1—42" 26-3A

OTHER SLITTERS

2—82" Langston; 1—"BA" & 1—"A"
1—65" S & R (Similar Kidder Model C.W.)
1—62" Johnstone Score-Cut Slitter
1—60" Langston Type A
1—60" Inman With Reeves Drive
1—52" Moisel (Shear-Cut)
1—40" & 1—60" Kidder SH, 40" rewind
1—40" Langston "Type A" (Shear-Cut)
1—24", 1—30", 1—36" & 1—40" Kidder S.L. & 1—36" SLN.

MISCELLANEOUS MACHINES

1—34" Roto Bag Weldmaster side-welded Poly Bag Machine
1—24" Schultz Automatic Rewinder & Wrapper
1—80" Coater & Laminator
1—60" Perkins Squeeze Roll Waxer
1—60" Perkins Creper
2—36" & 1—45" CSH Beck Sheeter
1—78" & 1—94" M & W Sheeter & Layboy
Hamblet Sheeters—32", 45", 64", & 104"
1—Simplex 7-24 Pouch Machine
2—PO-5 & 1—PO-2 Roto Bag Machs.
1—Poly Garment Bag Machine
1—Beasley French Bag Machine
1—Potdevin Model 110-L Cello Bag Machine
1—Weber Model "CN" Cellophane Satchel Bottom Bag Machine
1—Model 4-S & 1—Model 5 Potdevin Sack Machines
2—38" x 24" 4-Post Seybold Die Presses
5—Sheridans: 66" x 44", 60" x 30", 50" x 24", 44" x 22" & 36" x 18" and 1—Ford-Smith: 48" x 40"
1—V-Shape 6 oz. Paper Cup Machine
1—40½ Hudson Sharp Toilet Tissue Interfolder
Embossers 48", 38", 32" & 50" Heavy Duty Hudson Sharp Tinter-Embosser
1—13½ x 13½ Paper Converting Company's ¼ Folder
1—26½" x 22" Mosstype Rubber Plate Mounter & Proofer
1—44 x 22 Sheridan Helical Gears
1—24" Schultze Rewinder
6—12" Schultze Rewinders
1—27" x 44" Dietz Single-Fold Towel Folder
1—70" Waldron Automatic Unroll Splicer
1—55" and 1—64" Super Calendar Stacks

A-1

FOR SALE

BARKING DRUM
1—12 ft. diameter x 45 ft. long

BEATERS
2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54" x 48", cast iron tubs.

CALENDER STACKS
1—3 roll 84" calender stack.
1—4 roll 72" Calender Stack. (Extra heavy duty).
1—5 roll 82" face.
1—5 roll 86".

CHIPPERS
1—96" Murray 4 knife Chipper—anti-friction bearings.
1—84" 10 knife Casthage Chipper. Anti-friction bearings, with motor

COATER
1—42" Chapman Extrusion Type Coater

CONSISTENCY REGULATOR
1—Poirier Stainless Steel, new condition

CRUSHER & HAMMERMILL
1—Murray Chip Crusher.
1—Williams Hammermill.
1—Jeffrey Shredder.

CYLINDER MOLDS
1—30" diameter x 72" face.
5—36" diameter x 75" face, with couch rolls
1—36" diameter x 82" face.
3—36" diameter x 90" face, 18" diameter couch rolls.
3—42" diameter x 106" face.
2—60" dia. x 170" face.

DISINTEGRATOR
1—Shartle 8" disintegrator (new) with 125 horsepower induction motor (totally enclosed)

DRIVES
1—#6 Reeves vertical—anti friction bearings, totally enclosed.
1—Jones 21 H.P., ratio 10 to 1 (enclosed angle drive)
1—#4 Reeves Drive.
2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 H.P.)

DRYERS
1—16" diameter x 54" face (steel).
1—28" diameter x 84" face.
1—28" diameter x 48" face.
2—Calender Dryers, bronze, 30" x 128" with frames, gears & necessary rolls to make up the unit.
1—36" diameter x 44" face.
5—36" diameter x 76" face.
2—36" diameter x 84" face.
14—48" diameter x 48" face with bearings.
2—48" dia. x 52" face with frames, gears, bearings.
2—48" x 60" face with frames, gears & bearings
1—48" x 96" face.
6—48" diameter x 130" face.

EMBOSSING CALENDERS
1—43" 3-Roll Embossing Calender.
1—51½" 3-roll Smoothing Calender.
1—57" 3-roll Embossing Calender.
1—62" 2-roll Embosser.
1—90" 2-roll Smoothing Calender.

FILTER
1—Dorr-Oliver Filter, 3 ft. dia. x 6 ft. face, stainless steel construction, with pump.

FLAT SCREENS
1—12" Plate "Packer".

JORDANS
1—Jones Standard, new spare tackle, with 75 h.p. motor.
1—Noble & Wood Monarch, Type D, anti friction bearings.
1—Noble & Wood Baby Jordan, anti friction bearings, with 20 h.p. motor.
1—#6 Miami, anti friction bearings.

LABORATORY EQUIPMENT
1—4" face x 36" diameter Saveall
2—12" x 12" Sheet Molds
1—Washer for 5 lb. Beater.
1—24" Saveall, stainless steel.
1—20" Fourdrinier Wet End & Press Section.
2—8" x 8" Valley Sheet dryers.
1—12" x 12" Valley Sheet dryer.
1—18" x 20" Williams Sheet Dryer
1—15 lb. F. D. Jones Beater
1—8" x 8" Valley Hydraulic Press.
1—Greene Freeness Tester.
1—Cady Micrometer.
1—High speed Jordan, anti-friction bearings.
7—Mullen Testers, motorized.
1—2 qt. Auto Clave. Stainless Steel.
2—Elmendorf Tear Testers.
1—Hermann Disintegrator (new).
1—27" High Solid Coater.
1—Noble & Wood Baby Jordan, anti friction bearings, with 20 h.p. motor.

MISCELLANEOUS
1—Bird Centriffler, built 1958, new condition.

MOTORS
4—25 h.p. Westinghouse, totally enclosed, ball bearing. 705 r.p.m.

PRESS ROLLS
2—Chilled iron, chrome plated 9" x 72".
1—Chilled iron, chrome plated 10" x 74".

PULPERS
1—#1 Jones Pulp Master.
1—Black-Clawson Hydraslusher, 40 ton capacity, continuous type, complete with pump, regulating box and 125 h.p. motor, new, never used

PUMPS
1—Economy Fan Pump 6000 g.p.m., 20' head, 50 h.p. motor.

REELS
1—72" Downingtown Reel, 2 bowl.
1—84" 3 bowl revolving reel.
1—86" 2 bowl reel.
1—100" Rice Barton 2 bowl Reel, heavy duty.
1—116" Downingtown, 2 bowl, anti friction bearings.
1—123"—3 bowl Revolving Reel.
1—134" 2 drum.

REFINERS
1—Rice Barton Dynofiner, details on request.
1—12" Wiener Refiner, with 200 h.p. motor.
2—36" Bauer double disc #185E Refiners, each with two 100 h.p. motors.

ROLLS
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

ROTARY SCREENS
4—#2A Bird Rotary Screens, copper vats.
7—Trimbey, Senior Knotter Screens.
1—#2A—50 Bird, copper vat.
2—APMEW Rotary Pulp Screens.

SAVEALLS
1—24" Continuous Saveall, stainless steel.
1—LaMort 48" diameter x 82" face cylinder mold.
2—Savealls, cylinder molds, 42" diameter x 106" face, brand new vats.
2—Savealls, Rice Barton, cast iron vats, cylinder molds 48" diameter x 128" face, complete with 18" diameter couch rolls, all in very good condition.

SHEETERS
1—44" Spot Sheeter Complete
1—60" Hamblet with layboy.

SHREDDER
1—16" "Swift" Paper Shredder.

SLITTERS & WINDERS
4—42" Cameron Type 6.
1—42" Cameron Type 26-2A.
1—42" Cameron Type 40-2.
1—50" Cameron Type 6.
4—52" Cameron Type 9.
1—62" Cameron Type 6
1—86" Two Drum Moore & White 50" diameter rewind.
1—96" 4 drum Moore & White winder.
1—64" Waldron, Shear cut.

SLITTING DEVICE
84"—Quick change slitting device shear cut, complete.

STOCK PUMP
1—12 x 20 Shartle Triplex, with spare parts.

SUCTION COUCH SHELL
1—Downingtown suction couch shell only, 127½" face 26" diameter.

SUCTION COUCH ROLL
1—Beloit, 36" diameter x 246" face, SKF bearings.

SUCTION FELT ROLL
1—Gilbert & Nash 122" face.

SUCTION PRESS ROLL
1—Sandusky 18" dia. x 138" face Suction Press Roll.

SUPER CALENDER STACK
1—9 Roll 56".

TOILET WINDERS
1—72" Hudson-Sharp (Surface type winder).

VACUUM PUMPS
2—#1 Nash Hytor.
2—#3 Nash Hytor.
1—#6 Nash Hytor (Bronze)
1—#7 Nash Hytor, with 75 h.p. synchronous motor.
1—H-3 Nash.
1—K-5 Nash.
2—L-4 Nash.
1—L-5 Nash.
2—Connersville, 14 x 20.

VATS
2—Brand new Downingtown Iron End Vats, for 42" diameter x 112" face cylinder molds. Will cut down to your size.

WET MACHINES
1—84" Kamyr Complete Wet machine
1—96" Black-Clawson Wet Machine, new, never used, complete with pumps, motors and drive

YANKEE DRYER
1—12 ft. diameter x 181½" face.

Paddy Ross, Pres.

J. J. ROSS COMPANY

377 Frelinghuysen Ave. Tel.—Bigelow 3-3720 Newark 12, N. J.

Help Wanted

Required:

Assistant

MILL MANAGER

for new 2-Machine

NEWSPRINT MILL

THE MILL is the new Khulna Project in East Pakistan. It is now operating at full capacity and expansion plans are under consideration.

THE POSITION is an unusual one and requires an equally unusual man to fill it.

CANDIDATES must have extensive experience in newsprint production . . . and . . . proven management ability. Age, preferably 35 to 40.

FINANCIALLY, this position merits careful consideration as it provides generous travel and living allowances, free housing, tax concessions, — plus substantial performance and production bonuses.

Enquiries are invited in confidence. Each will be promptly acknowledged. Early interviews.

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BLEACHED KRAFT PULP MILL SUPERINTENDENT

Midwestern Bleached Kraft Pulp & Paper Mill is seeking an experienced Pulp Mill Superintendent with technical background.

Excellent opportunity, salary and benefits.

Send resume, including education, experience and salary requirements.

Resumes will be kept strictly confidential.

Address Box 60-160 care Paper Trade Journal.

A-15

SUPERINTENDENT

Folding Boxboard. Able assume complete charge one machine Mill. Outline full qualifications, salary expected first letter. Box 60-154, care Paper Trade Journal. A-1

Situations Wanted

SALESMAN AND CONSULTANT AVAILABLE. Ten years experience operating paper finishing department. Seventeen years selling paper finishing equipment for well known international and national supplier. Right acquaintances, Ohio, Michigan, Wisconsin. Box No. 60-149, care Paper Trade Journal. A-1

SUPERINTENDENT—Twenty Seven years experience High Grade Folding and Set up Box Board. Can assume complete charge. Address Box 60-159 care Paper Trade Journal. A-15

LOOK through the columns of the CLEARING HOUSE

Wanted

Tissue Mill Requires:

1—Suction Press, width of drilled face 156", complete with top roll, press frames, loading devices, etc.
1—Tissue Calender, two roll, roll face 156".
1—Suction Press, width of drilled face about 108", other details as above.
1—Fourdrinier complete, wire width 108", suitable for use on tissue machines, including plain couch roll and top couch roll, operating speed 1200 fpm.
1—Tissue Calender, two roll, roll face 108".

Reply Box 60-156 care Paper Trade Journal.

A-1

DRYING CYLINDERS

Eight Drying Cylinders 48" diameter by nearest to 54" face, if possible complete with bearings and framing. Full particulars and price to Premier Paper Mills Ltd., 62 London Wall, London, E.C. 2, England.

A-15

BUY U. S. SAVINGS BONDS

For Sale

"HYDRAPULPER"

B-C 12 ft. batch type with junker, 150 h.p., 44/3/60 motor, Shartle Pump with motor.

New 1957. Used 1 year.

ROSS PAPER MACHINERY COMPANY
265 Passaic St., Newark 4, N. J.
Phone: HUmboldt 4-8880

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FOR SALE

BARGAIN PRICES

1—110" S.S. Head Box. Complete with Flow Rolls and Stands.
1—110" Pope Reel. B. & S.
1—111" Size Press, A.F. Bearings. B. & S. Spare Rolls.
2—Imco, Standard Deckers, Design #6. 40" Dia. x 96" Cylinder Mold, Steel Tank, C.I. Ends. 10" Inlet, 12" Discharge. Couch Rolls—24" Dia. x 97" Face. Roller Chain Drive.
1—Miami #2 Jordan, New S. S. Fillings.
1—Miami #1 Jordan, C. I. Fillings.
1—E. D. Jones Majestic Jordan, S. S. Fillings.
2—K-5 Nash Vacuum Pumps.
1—45" Seybold Dayton Trimmer.
1—65" Seybold Dayton Trimmer.
1—75" Seybold 20th Century Trimmer.

The above machinery is in excellent condition and we can quote you very low prices.

WRITE—WIRE—PHONE

RUDERMAN MACHINERY EXCHANGE
GOUVERNEUR, NEW YORK
Telephone 333 - 334 TF

FOR SALE

72" x 336" Norton roll grinder with drive, still set up at Pusey & Jones Corporation. Grinder has attachment so can grind 12 ft. diameter Yankee dryers. Immediately available. For further information call Cambridge, Massachusetts, Trowbridge 6-0365.

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Box 231, Cambridge, Massachusetts

A-15

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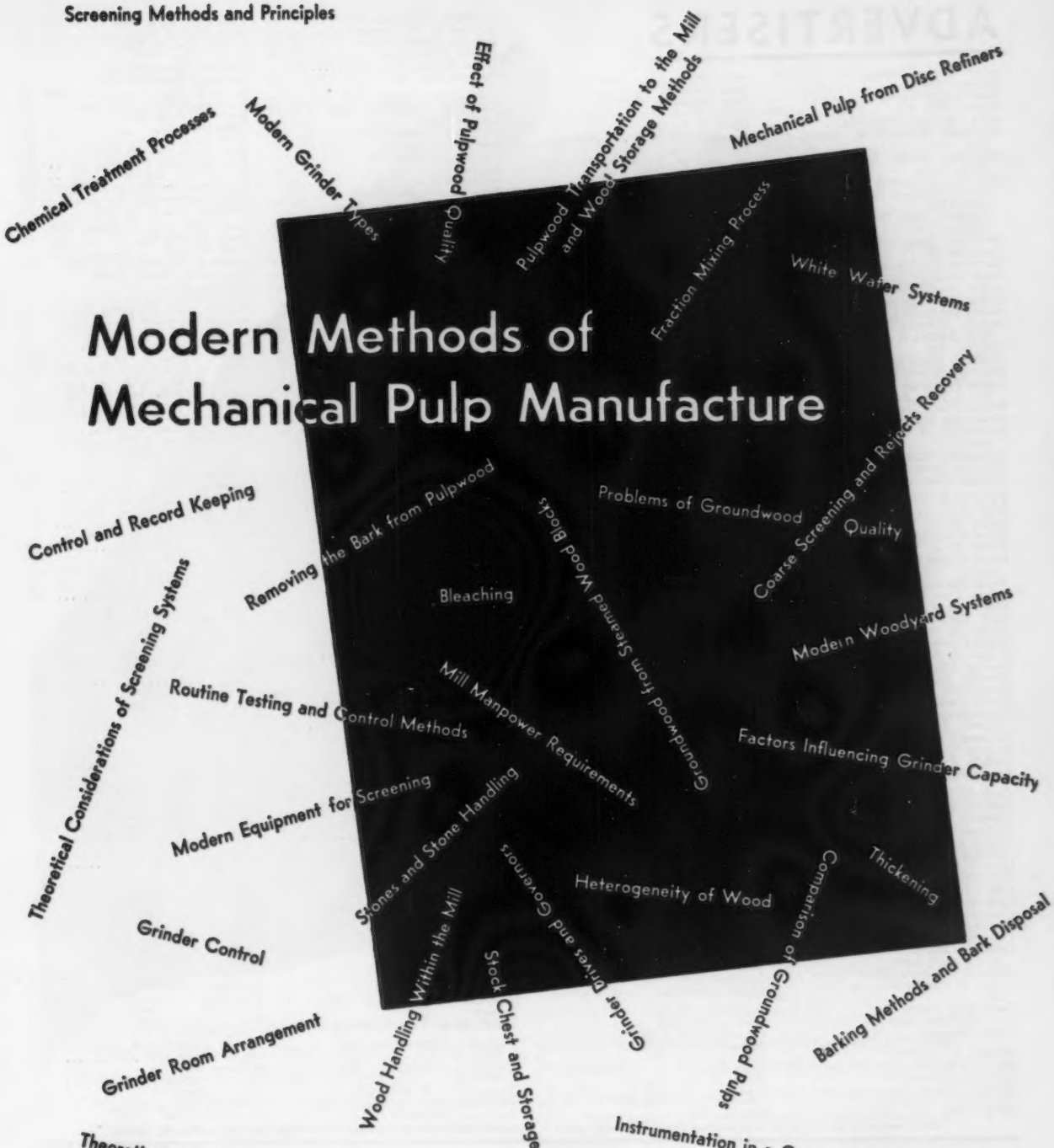
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Lockwood Trade Journal Co., Inc., 49 W. 45 St., N.Y. 36, N.Y.

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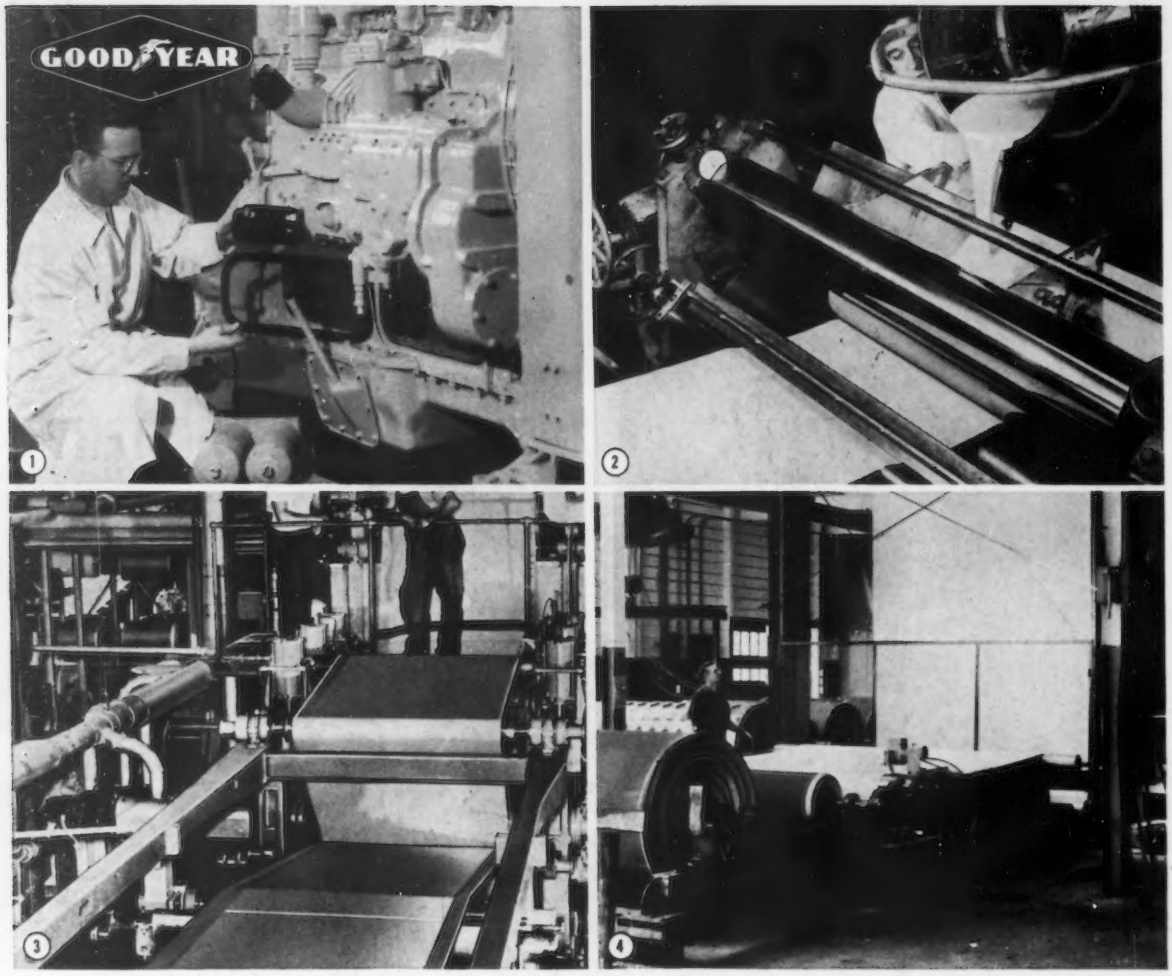

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